ORDER NO. AD9205134C3

V00777

Service Manual

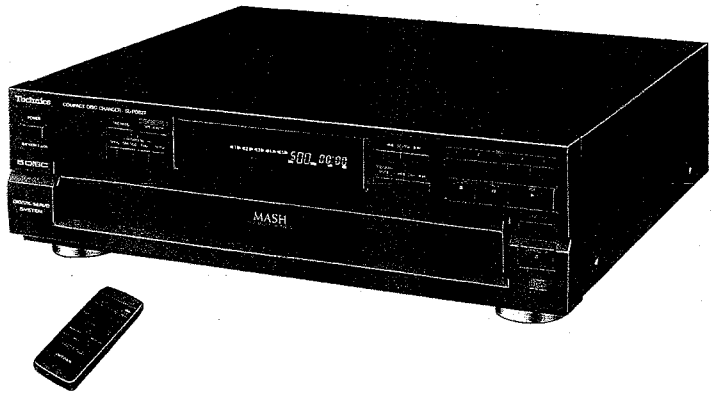
Compact Disc Changer

SL-PD827

COMPACT disc DIGITAL AUDIO

DIGITAL

MASH※ multi-stage noise shaping



Colour

(K)... Black Type

Area

Suffix for Model No.	Area	Colour
(GC)	Asia, Latin America, Middle Near East and Africa.	(K)
(GN)	Oceania.	

※
- Technics (or Panasonic) developed the world's first MASH type DAC and ADC. MASH technology was invented by NTT (LSI Labs).
- MASH is a trademark of NTT.

NEW MECHANISM SERIES (RAE0201-1)

SPECIFICATIONS

■ Audio

No. of channels	2 (left and right, stereo)
Frequency response	2–20,000 Hz, ±1 dB
Output voltage	2 V (at 0 dB)
Dynamic range	92 dB
S/N ratio	102 dB
Total harmonic distortion	0.007% (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
DA converter	MASH※ (1 bit)
Output impedance	Approx. 1 kΩ
Load impedance	More than 10 kΩ

■ Pickup

Wavelength	780 nm

■ General

Power consumption	15 W
Power supply	
For (GN) area:	AC 50/60 Hz, 230–240 V
For (GC) area:	AC 50/60 Hz, 110 V/127 V/220 V/240 V
Dimensions (W×H×D)	430×130×401 mm
Weight	5.0 kg

Note:
Design and specifications are subject to change without notice.
Weight and dimensions are approximate.

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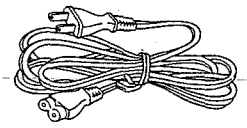
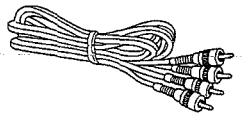
Technics

■ ACCESSORIES

Note:
The configuration of the AC power supply cord differs according to area.

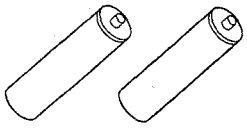


AC power supply cord
(RJA0004)..... (GC)
(SJA173)..... (GN) **... 1 pc.**

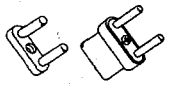


Stereo connection cable
(SJP2249-3)..... 1 pc.

Remote control transmitter
(RAK-SL308E) .....1 pc.



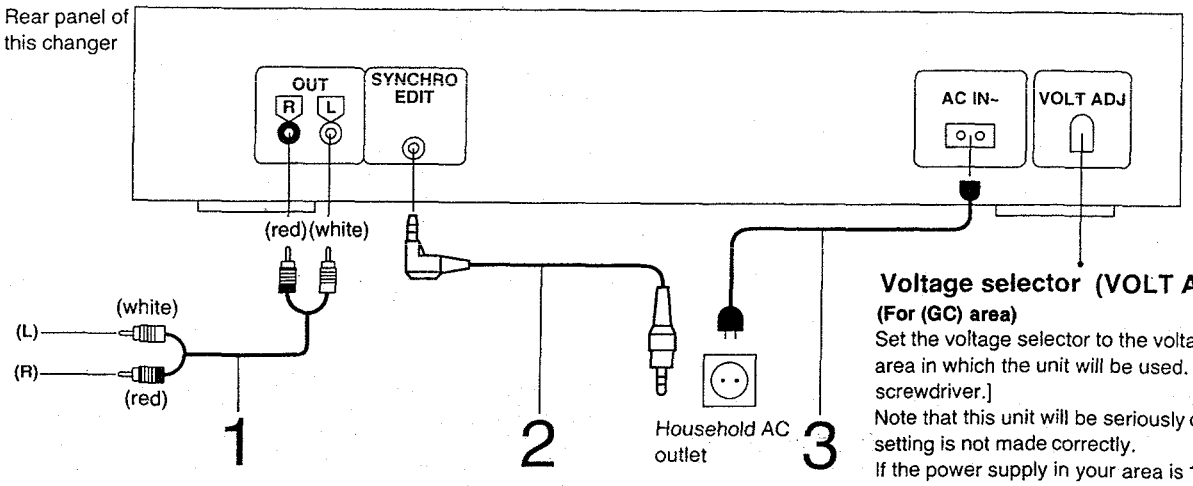
Batteries
UM-4, "AAA", R03 ..... 2 pcs.



Power plug adaptor
(SJP9215)..... 1 pc.
(For (GC) area)

■ CONNECTIONS

Before connecting the changer to your audio system, be sure that the power of the changer and all other system components are turned off.



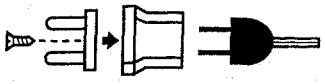
Voltage selector (VOLT ADJ)
(For (GC) area)
Set the voltage selector to the voltage setting for the area in which the unit will be used. [Use a minus (−) screwdriver.]
Note that this unit will be seriously damaged if this setting is not made correctly.
If the power supply in your area is 117 V or 120 V, set to the "127 V" position.

1 Connect the stereo connection cable (included) to CD or AUX terminals of the amplifier or the receiver.

2 Connect the synchro edit cable (included with the cassette deck) to SYNCHRO EDIT terminal of Technics cassette deck.

3 Connect the power supply cord (included) to the household AC outlet or to AC OUTLET of Technics component.

For areas except Australia
If the power plug will not fit your socket, use the power plug adaptor (included).



■ PRECAUTION OF LASER DIODE

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.
Wave length: 780nm
Maximum output radiation power from pickup: 100μW/VDE

Laser radiation from the pickup lens is safety level, but be sure the followings:

1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

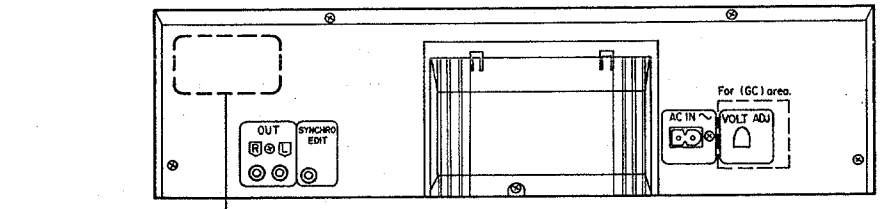
ACHTUNG: Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit abgestrahlt.

Wellenlänge: 780nm
Maximale Strahlungsleistung der Lasereinheit: 100μW/VDE

Die Strahlung an der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinheit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlinse blicken.
4. Nicht über längere Zeit in die Fokussierlinse blicken.

ADVARSEL: I dette a apparat anvendes laser.

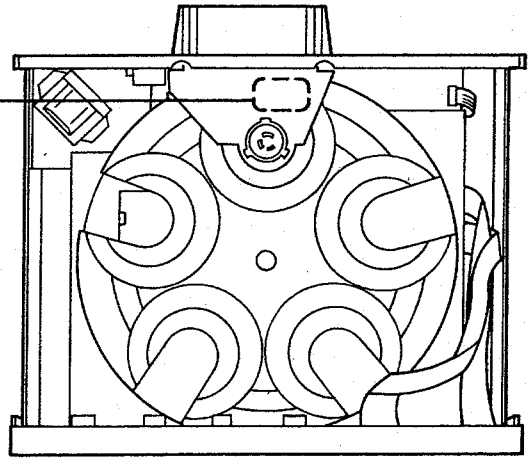


SQWD7

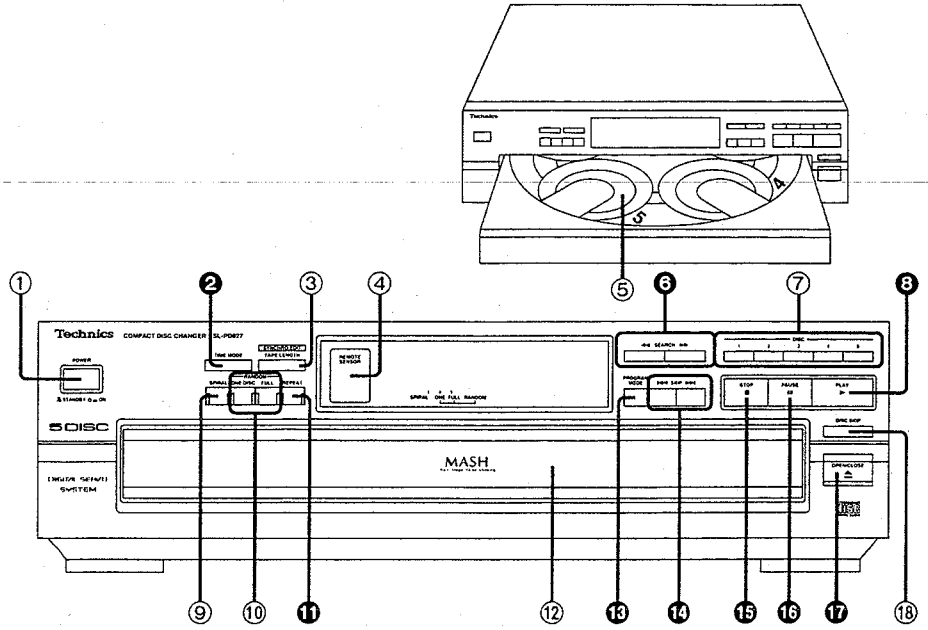
Obs:
Apparaten innehåller laser
Komponent av höger laserklass
än klass 1.

RQLS0021

ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VORSICHT-Unsichtbare Laserstrahlung, wenn Abdeckung geöffnet. Nicht dem Strahl aussetzen. RQLS0021
DANGER-Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.



■ LOCATION OF CONTROLS AND COMPONENTS



Control section

Numbers with black background (for example ❷) indicate functions available on the remote control. (See page 5.)

① Power "STANDBY ⏻/ON" switch (POWER, ■ STANDBY ⏻ ▬ ON)

This switch switches ON and OFF the secondary circuit power only. The unit is in the "standby" condition when this switch is set to the STANDBY ⏻ position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.

❷ Time mode button (TIME MODE)

Use to select the desired time mode. Each time you press the button, the display information will change as follows.

1. Track number and its elapsed play time of the current track.
2. Track number and remaining time of the current track.
3. Total track numbers and playing time of the current disc.
4. Total elapsed play time of the current disc.

③ Tape length button (TAPE LENGTH)

When you attempt to record compact discs to tape, press to select the tape length so that the changer can then automatically calculate what tracks fit on each side of the tape.

④ Remote control signal sensor (REMOTE SENSOR)

⑤ Disc trays (1–5)

You can load up to five discs, one disc per one tray.

❻ Search buttons (◀◀ SEARCH ▶▶)

Press to move forward and backward through the tracks on the disc.

⑦ Disc buttons (DISC 1–5)

Use to select the desired disc.

❽ Play button (▶ PLAY)

⑨ Spiral button (SPIRAL)

Press to play the first tracks on all the loaded discs in sequence, followed by the second tracks on all the discs, and so on.

⑩ Random buttons (RANDOM)

•One disc random button (ONE DISC)

Press to activate one disc random play. The changer will choose a disc and play all the tracks in random sequence, and choose next disc, and so on.

•Full random button (FULL)

Press to activate full random play. The changer will select the sequence to be played from all of the loaded discs, in an exclusively random manner.

⓫ Repeat button (REPEAT)

Press to activate the repeat function.

⑫ Loading drawer

You can load and unload discs when this drawer is open.

⓭ Program mode button (PROGRAM MODE)

The program mode changes as follows each time the button is pressed.

sequential ⟶ program ⟶ delete

⓮ Skip buttons (I◀◀ SKIP ▶▶I)

Use to skip to the beginning of the track.

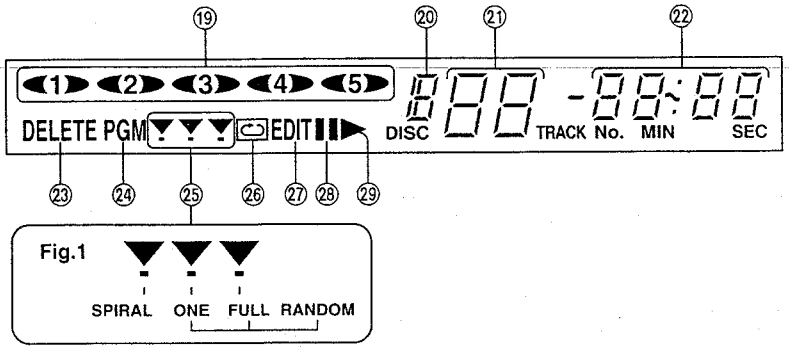
⓯ Stop button (■ STOP)

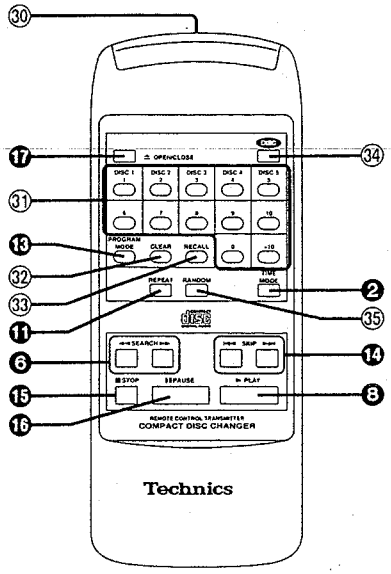
⓰ Pause button (❚❚ PAUSE)

⓱ Loading drawer open/close button (▲ OPEN/CLOSE)

⑱ Disc skip button (DISC SKIP)

Use to rotate the disc tray.





Display section

⑲ Disc indicators (◀1▶ ~ ◀5▶)
The indicator corresponding to the playing disc flashes.
In the program play mode, programmed disc indicators will illuminate. In the delete play mode, disc indicators to be deleted will go out.

⑳ Disc number/tape side display
Shows the number (1–5) of the current disc, or shows the tape side (A or B) in the CD edit-recording mode.

㉑ Track number display
Shows the number (up to 99) of the current track.

㉒ Time/program sequence display
Shows the elapsed playing time of the track in play.
Also shows the program sequence in the program play mode, and the sequence you entered in the delete play mode.

㉓ Delete play indicator (DELETE)
Lights in the delete play mode.

㉔ Program play indicator (PGM)
Lights in the program play mode.

㉕ Play mode indicators (▼▼▼) (Fig. 1)
Each indicator points to the following play modes:
SPIRAL: Spiral play
ONE: One disc random play
FULL: Full random play

㉖ Repeat indicator (⟲)
Lights when the repeat function is activated.

㉗ Compact disc edit indicator (EDIT)
Lights when the CD-edit recording mode is activated.

㉘ Pause indicator (❚❚)
Lights in the pause mode.

㉙ Play indicator (▶)
Lights in the play mode.

Remote control section

The function description of buttons ❷, ❻, ❽, ⓫, ⓭, ⓮, ⓯, ⓰ and ⓱ is as described under "Control section" on page 4.

㉚ Remote control transmission window
Aim the transmission window toward the remote sensor of the main unit when operating the remote control.

㉛ Numeric buttons (1–10, 0, >10)
Use to specify the desired track or the disc number.

㉜ Clear button (CLEAR)
Press to cancel the programmed/deleted entry.

㉝ Recall button (RECALL)
Press to confirm the contents of the programmed/deleted selections.

㉞ Disc button (DISC)
Press this button before selecting the disc number (1–5) on the numeric buttons.

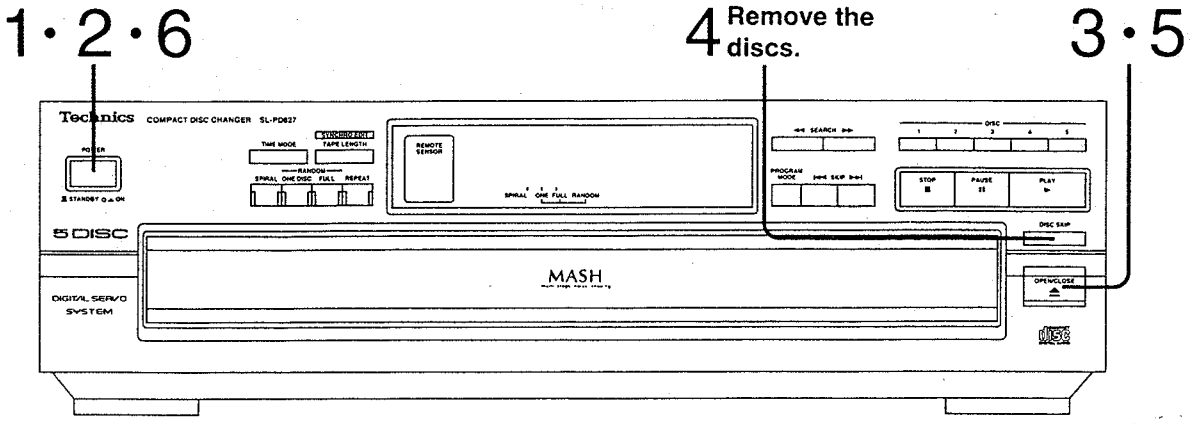
㉟ Random button (RANDOM)
Use to activate the full random play.

■ BEFORE MOVING

CAUTION:

Before moving this changer to another location, be sure that no discs were left in the changer and that the changer was not switched off while in the play mode.

Failure to do so will expose the compact discs and the changer to the risk of severe damage.



1 **Press POWER to switch off the power.**

2 **Press POWER to switch on the power.**

3 **Press OPEN/CLOSE to open the loading drawer.**

4 **Press DISC SKIP to rotate the disc trays and remove the discs from all disc trays.**

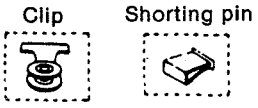
5 **Press OPEN/CLOSE to close the loading drawer.**

6 **Press POWER to switch off the power.**

If you have pressed a wrong button by mistake, return to step 1.

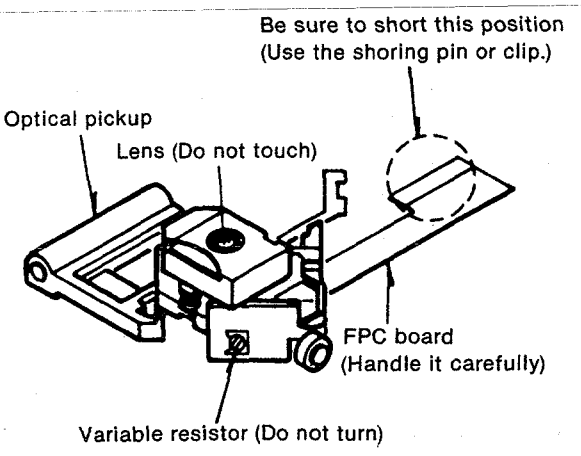
■ HANDLING PRECAUTIONS FOR OPTICAL PICKUP

The laser diode in the optical pickup may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the optical pickup.



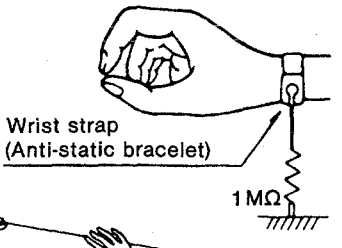
• Handling of optical pickup

1. Do not subject the optical pickup to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an antistatic shorting pin is inserted into the flexible board (FPC board).
   When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board (FPC board).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.


Be sure to short this position
(Use the shoring pin or clip.)
Optical pickup
Lens (Do not touch)
FPC board
(Handle it carefully)
Variable resistor (Do not turn)

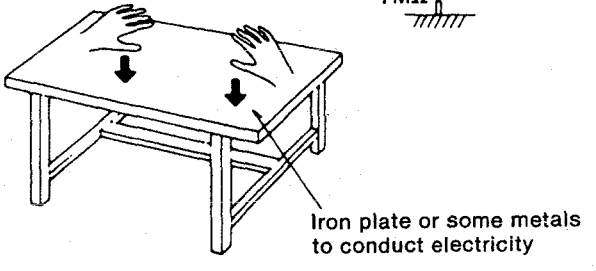
• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table gounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.



Caution:

The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the optical pickup.

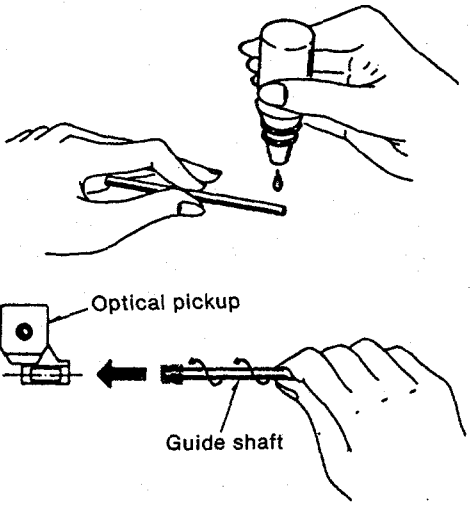


■ INSTRUCTIONS FOR TRAVERSE OIL (Part No. SZZ0L31)

The container contains 6g (approx. 3ml) of oil.
One application (one shaft) uses 0.05ml of oil.

How to Use

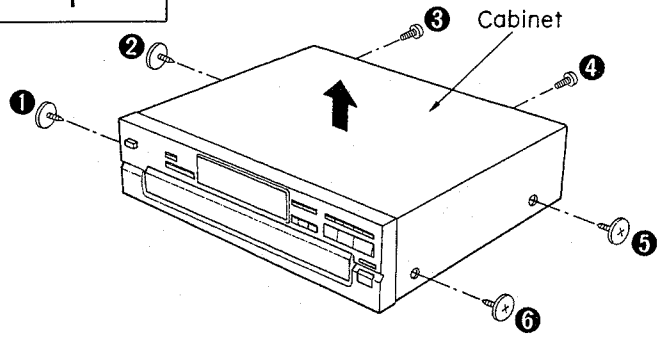
(1) Remove the guide shaft in the traverse deck from the optical pickup and clean off any dust from the guide shaft.
(2) Apply one drop of the SZZ0L31 to the tip of the guide shaft.
(3) Hold the guide shaft so that its oiled end touches the optical pickup and insert it into the bearing while rotating it slowly.
(4) After securing the guide shaft, move the optical pickup by hand several times to the left and right to distribute the oil on the guide shaft.



■ DISASSEMBLY INSTRUCTIONS

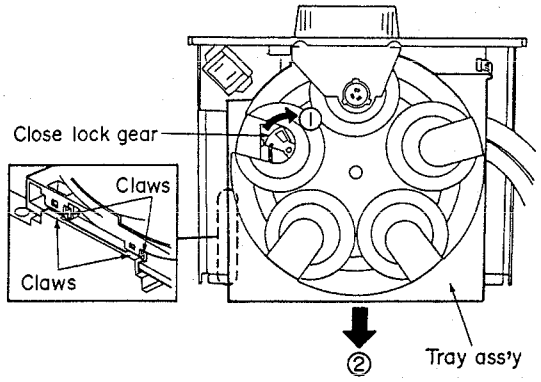
Warning: This product uses a laser diode. Refer to caution statements on pgae 3.

Ref. No. 1	Removal of the cabinet
Procedure 1	

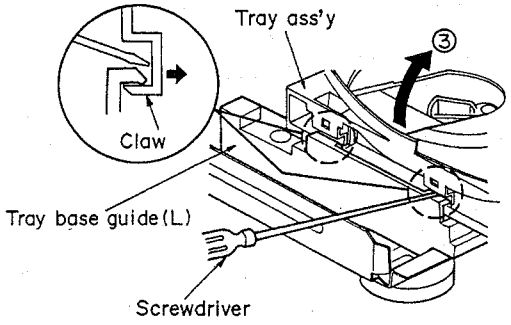


1. Remove the 6 screws (❶~❻).
2. Remove the cabinet in the direction of arrow.

Ref. No. 3	Removal of the tray ass'y
Procedure 1→2→3	**Note:** Be sure the close position to remove the tray ass'y.

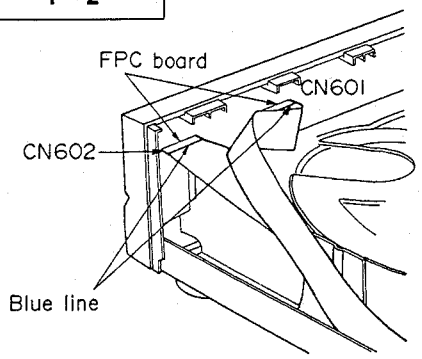


1. Keep the close lock gear pressed in the direction of arrow ① and move the tray ass'y in the direction of arrow ②.
2. Fit the claws of the tray ass'y in the claws of the tray base guide (L).



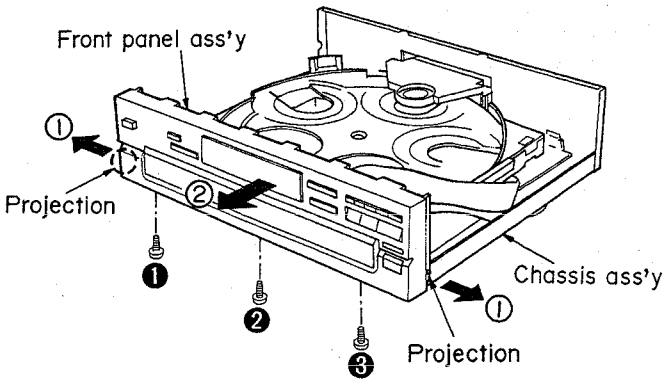
3. Remove the tray ass'y in the direction of arrow ③ by pressing the claw of the tray ass'y with a screw driver or another suitable object.

Ref. No. 2	Removal of the front panel ass'y
Procedure 1→2	

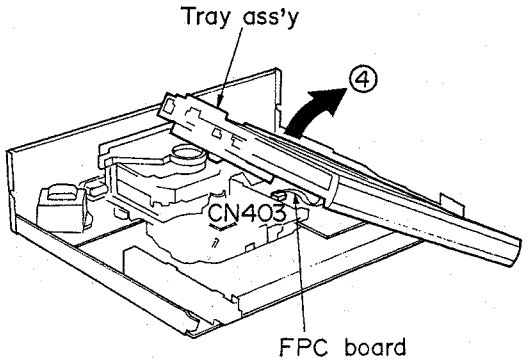


■ **Note on installation**
Connect the FPC board with the blue line upward.

1. Pull out the FPC board.

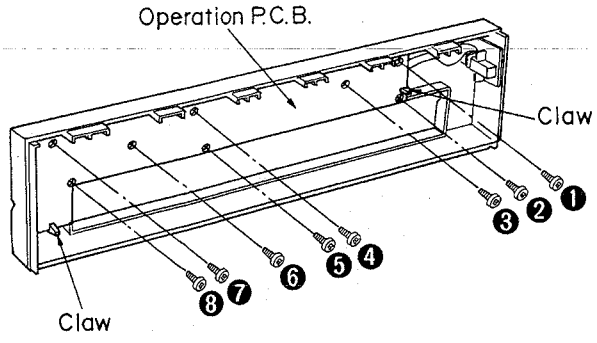


2. Remove the 3 screws (❶~❸).
3. Pull the front panel ass'y in both directions of arrow ① to unlock it from the projection of the chassis ass'y.
4. Remove the front panel ass'y in the direction of arrow ②.



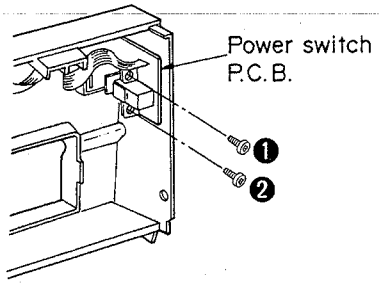
4. Raise the left side of the tray ass'y in the direction of arrow ④ and remove the claw on the right side.
5. Pull out the FPC board

Ref. No. 4	Removal of the operation P.C.B.
Procedure 1→2→4	



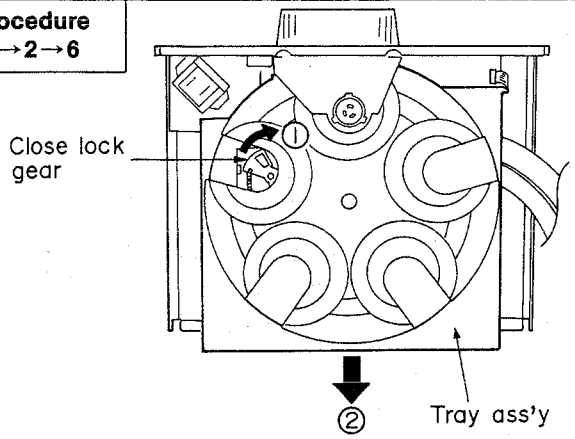
1. Remove the 8 screws (❶~❽).
2. Release the 2 claws.

Ref. No. 5	Removal of the power switch P.C.B.
Procedure 1→2→5	

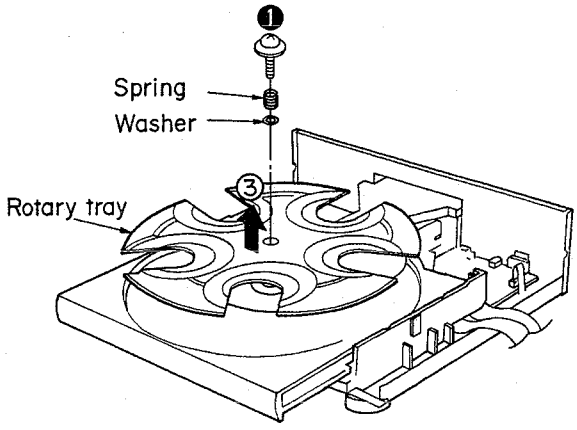


• Remove the 2 screws (❶, ❷).

Ref. No. 6	Removal of the rotary tray
Procedure 1→2→6	

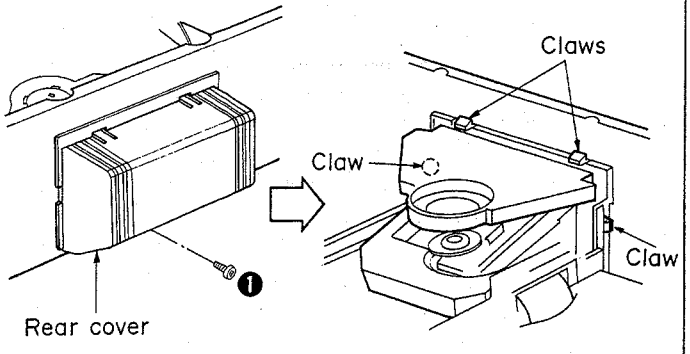


1. Keep the close lock gear pressed in the direction of arrow ① and move the tray ass'y in the direction of arrow ②.



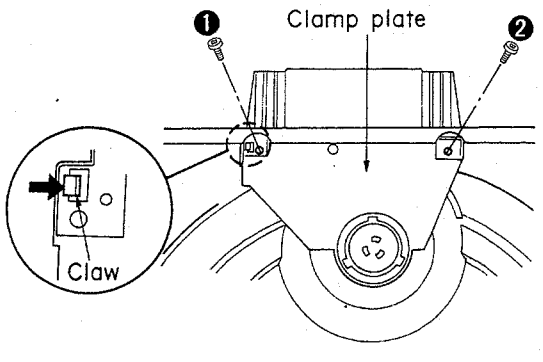
2. Remove the 1 screw (❶).
3. Remove the spring and washer.
4. Remove the rotary tray in the direction of arrow ③.

Ref. No. 7	Removal of the rear cover
Procedure 1→7	



1. Remove the 1 screw (❶).
2. Release the 4 claws.

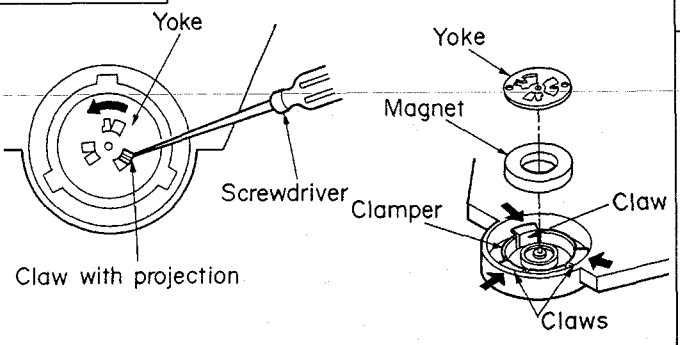
Ref. No. 8	Removal of the clamp plate
Procedure 1→8	



1. Remove the 2 screws (❶, ❷).
2. Release the 1 claw.

Ref. No. 9	Removal of the clamper ass'y (yoke, magnet and clamper)

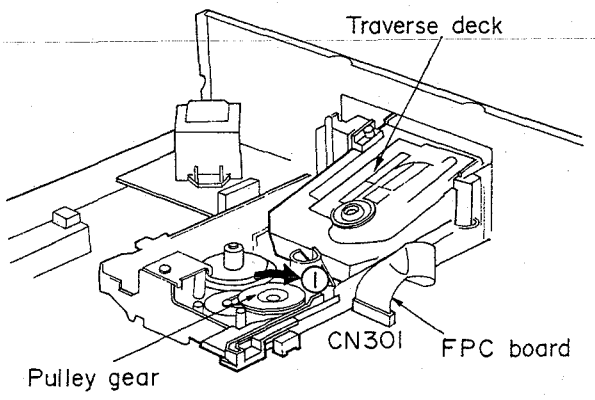
Procedure
1→8→9



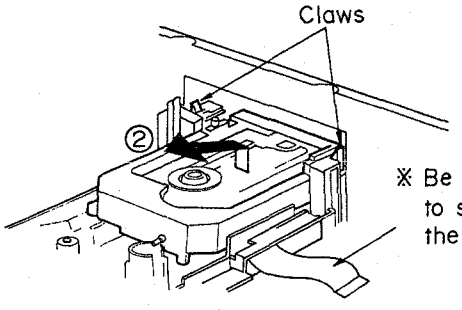
1. While lifting the claw with a screwdriver, rotate yoke in the direction of arrow and remove the yoke and magnet.
2. Release the 3 claws of the clamper.

Ref. No. 10	Removal of the traverse deck

Procedure
1→2→3→7→8→10



1. Rotate the pulley gear in the direction of arrow ① until the traverse deck comes up.
2. Pull out the FPC board (CN301).

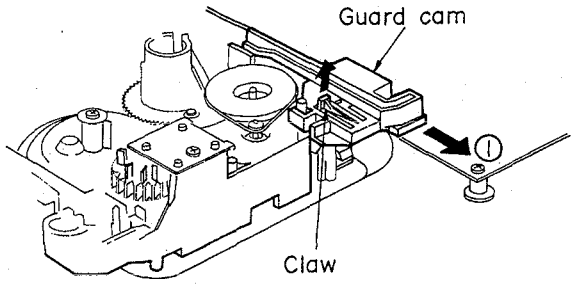


※ Be careful not to scratch or bend the FPC board.

3. Release the 2 claws.
4. Remove the traverse deck in the direction of arrow ②.

Ref. No. 11	Removal of the guard cam

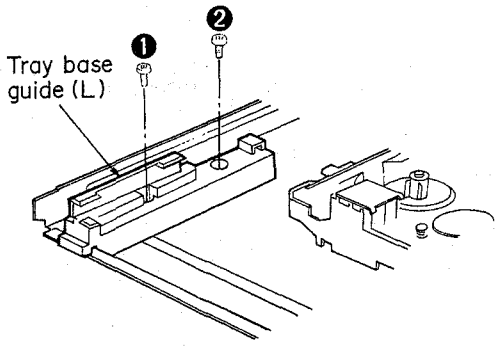
Procedure
1→2→3→11



1. Release the 1 claw and then remove the guard cam in the direction of arrow ①.

Ref. No. 12	Removal of the tray base guide (L)

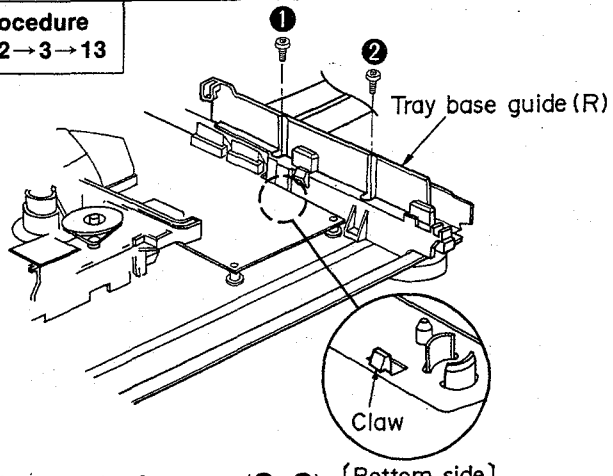
Procedure
1→2→3→12



• Remove the 2 screws (❶, ❷).

Ref. No. 13	Removal of the tray base guide (R)

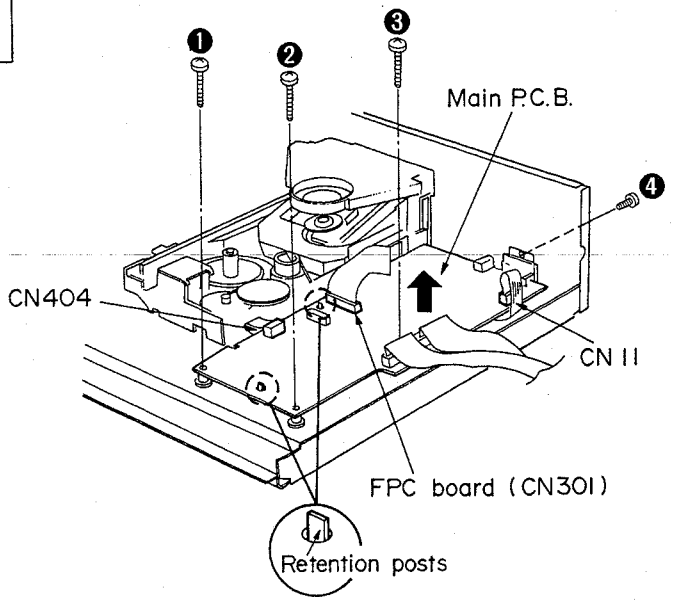
Procedure
1→2→3→13



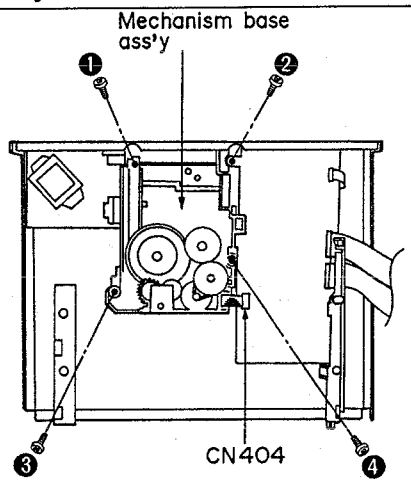
1. Remove the 2 screws (❶, ❷). (Bottom side)
2. Release the 1 claw.

Ref. No. 14	Removal of the main P.C.B.
Procedure 1→2→3→11 →13→14	

1. Remove the 4 screws (❶~❹),
2. Lift the main P.C.B. off the retention posts on the chassis.
3. Remove the 2 flat cable (CN11, CN404).
4. Pull out the FPC board (CN301).
5. Remove the main P.C.B. in the direction of arrow.

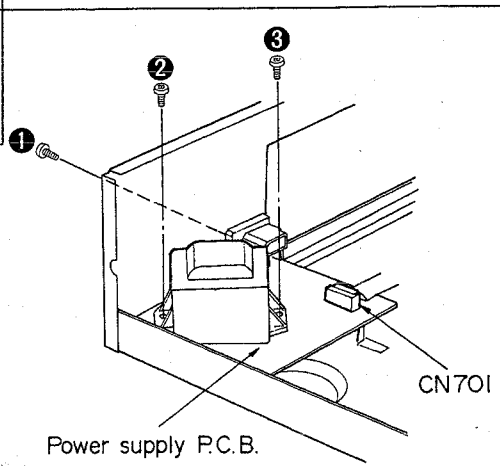


Ref. No. 15	Removal of the mechanism base ass'y
Procedure 1→2→3→7 →8→10→11 →15	



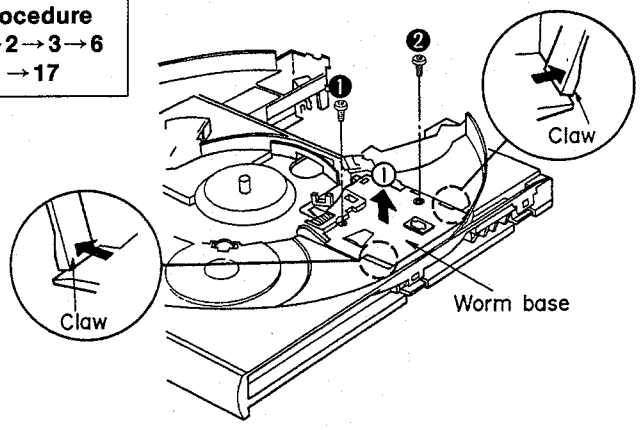
1. Remove the 1 flat cable (CN404).
2. Remove the 4 screws (❶~❹).

Ref. No. 16	Removal of the power supply P.C.B.
Procedure 1→2→3→7 →8→10→11 →15→16	

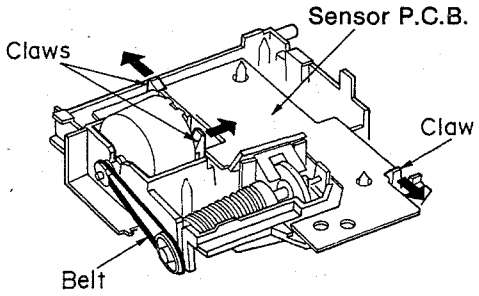


1. Remove the 1 flat cable (CN701).
2. Remove the 3 screws (❶~❸).

Ref. No. 17	Removal of the worm base and sensor P.C.B.
Procedure 1→2→3→6 →17	



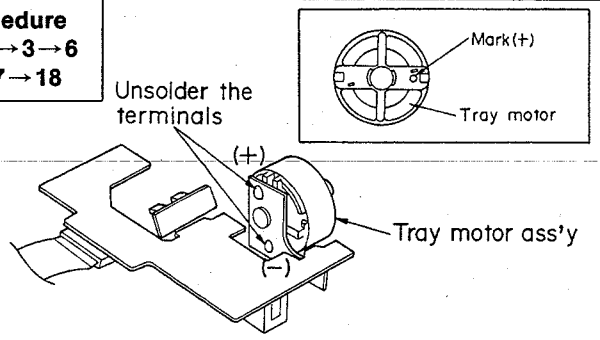
1. Remove the 2 screws (❶, ❷).
2. Release the 2 claws and then remove the worm base in the direction of arrow ①.



3. Remove the belt.
4. Release the 3 claws.

Ref. No. 18	Removal of the tray motor ass'y

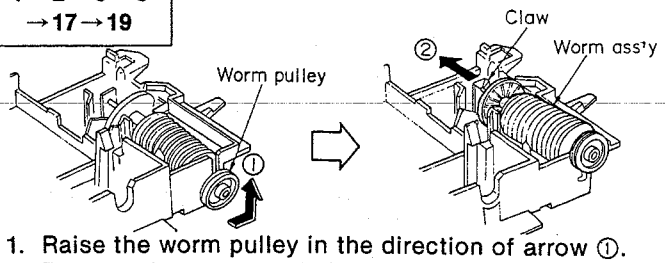
Procedure 1→2→3→6→17→18



• Unsolder the terminals of the tray motor ass'y

Ref. No. 19	Removal of the worm ass'y

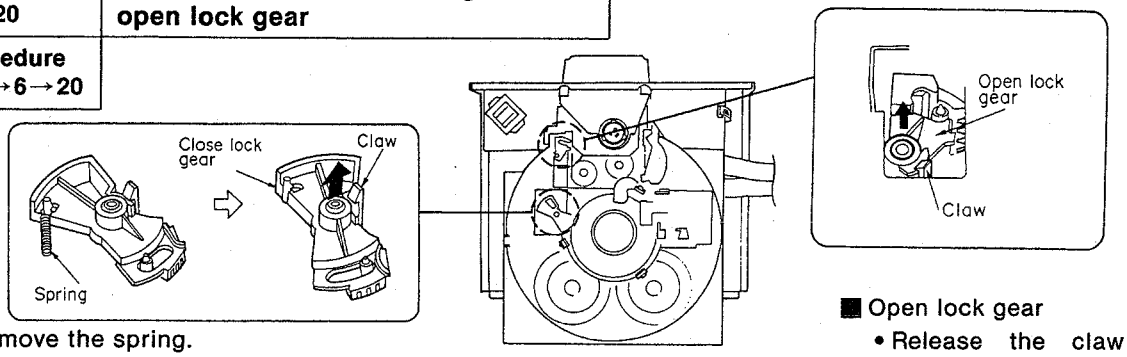
Procedure 1→2→3→6→17→19



1. Raise the worm pulley in the direction of arrow ①.
2. Remove the worm ass'y by pressing the claw in the direction of arrow ②.

Ref. No. 20	Removal of the close lock gear and open lock gear

Procedure 1→2→6→20



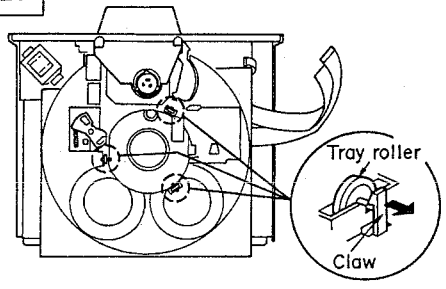
1. Remove the spring.
2. Release the claw and then remove the close lock gear in the direction of arrow.

■ Open lock gear

• Release the claw and then remove the open lock gear in the direction of arrow.

Ref. No. 21	Removal of the tray roller

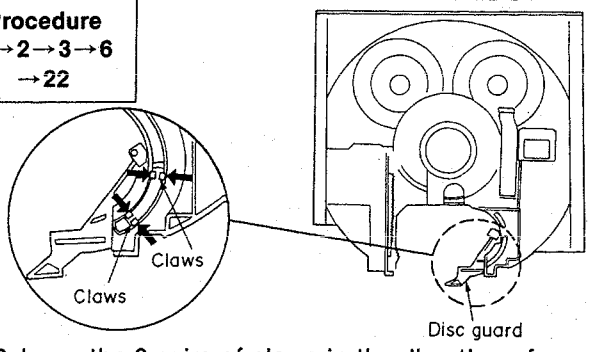
Procedure 1→2→6→21



• Release the claw in the direction of arrow.

Ref. No. 22	Removal of the disc guard

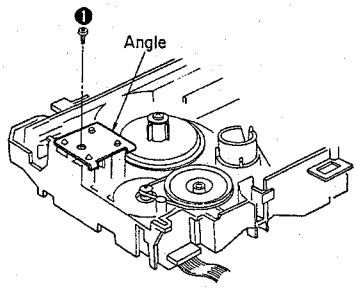
Procedure 1→2→3→6→22



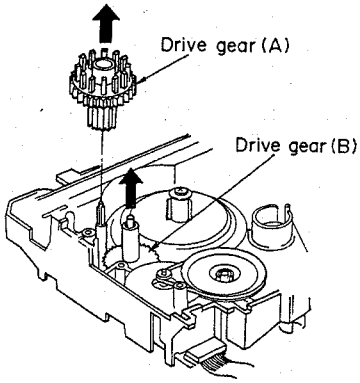
• Release the 2 pairs of claws in the direction of arrow.

Ref. No. 23	Removal of the drive gear (A) and drive gear (B)

Procedure 1→2→3→23



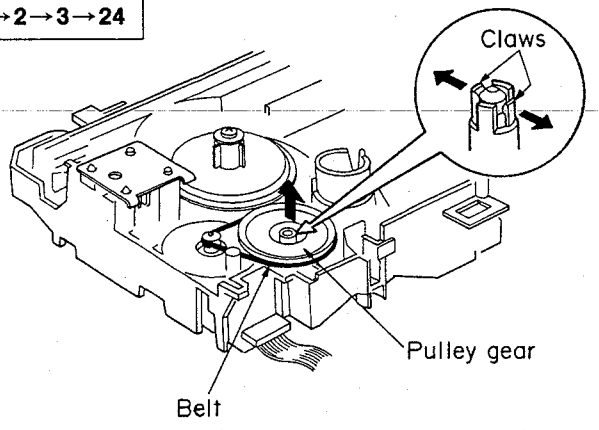
1. Remove the 1 screw (❶).
2. Remove the angle.



3. Remove the drive gear (A) and drive gear (B).

Ref. No. 24	Removal of the pulley gear

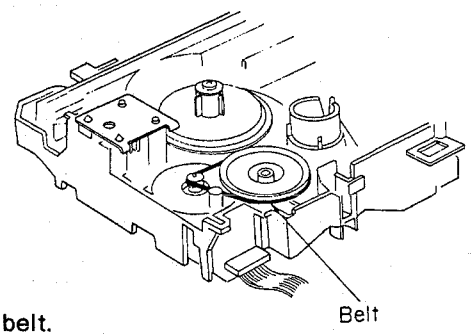
Procedure
1→2→3→24



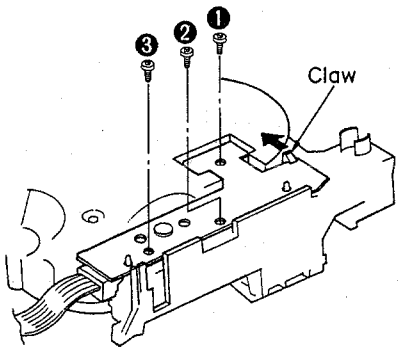
1. Remove the belt.
2. Release the 2 claws and then remove the pulley gear in the direction of arrow.

Ref. No. 26	Removal of the loading motor P.C.B.

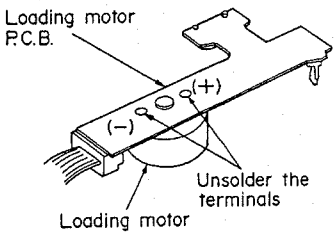
Procedure
1→2→3→7→8→10→11→15→26

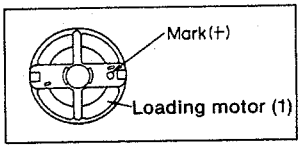


1. Remove the belt.



2. Remove the 3 screws (❶~❸).
3. Release the 1 claw.

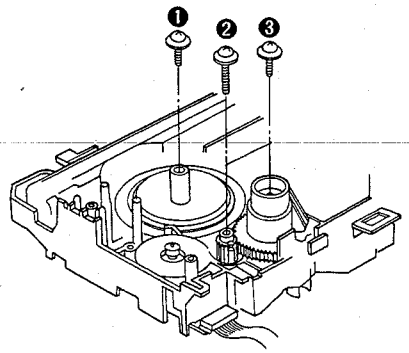




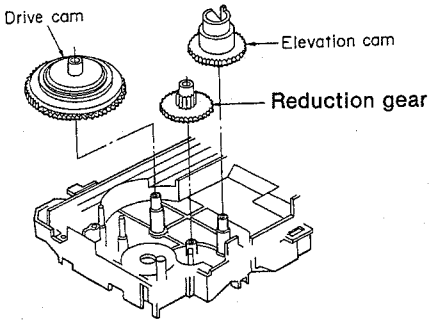
4. Unsolder the terminals of the loading motor.

Ref. No. 25	Removal of the drive cam, elevation cam and reduction gear

Procedure
1→2→3→23→24→25



1. Remove the 3 screws (❶~❸).

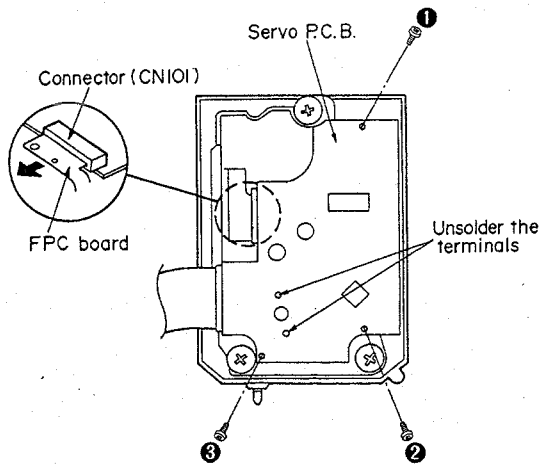


2. Remove the drive cam, elevation cam and reduction gear.

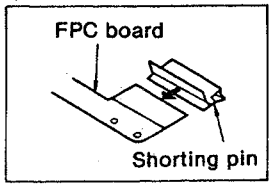
Ref. No. 27	Remval of the servo P.C.B.

Procedure
1→2→3→7→8→10→27

1. Remove the 3 screws (❶~❸).
2. Unsolder the 2 terminals of spindle motor.
3. Remove the FPC board from the optical pickup.



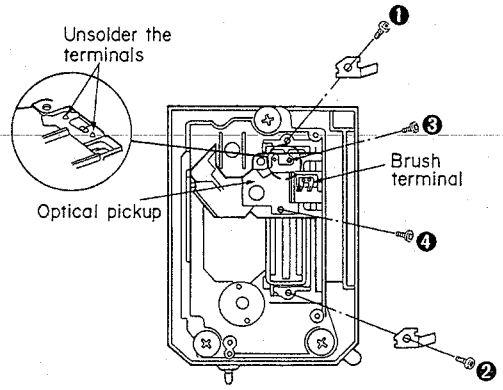
Caution: To prevent the breakdown of the laser diode, antistatic shorting pin is inserted into the FPC board.



Ref. No. 28	Removal of the optical pickup
Procedure 1→2→3→7 →8→10→27 →28	**Refer to the handling precautions for optical pickup and instructions for traverse oil (See page 7).**

1. Remove the 2 screws (❶, ❷).
2. Unsolder the 2 terminals and the 2 screws (❸, ❹).

Caution: Take care not to touch the brush terminal.



Ref. No. 29	Removal of the spindle motor
Procedure 1→2→3→7 →8→10→27 →29	

1. Loosen the 1 screw (❶) by using a 1.27mm allen wrench and remove the turntable.
2. Remove the 2 screws (❷, ❸).

Caution:

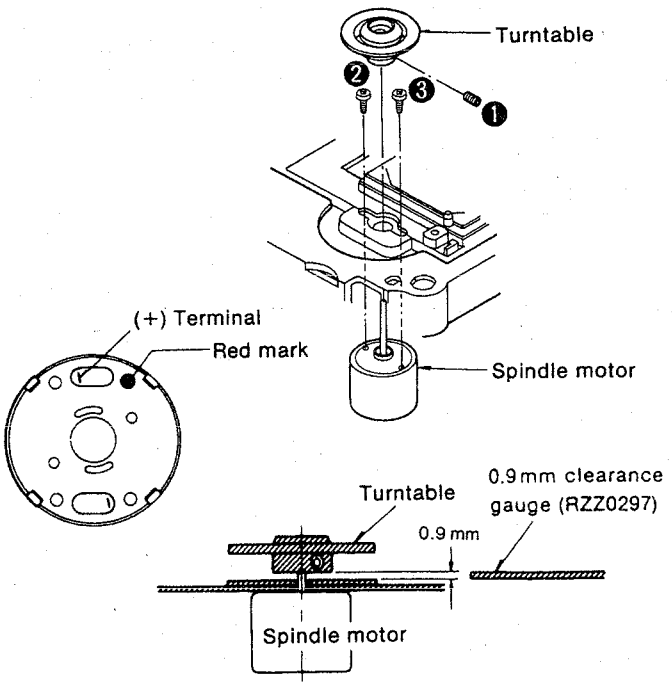
1. Turntable height adjustment is necessary any time the turntable or spindle motor is replaced.
2. The (+) terminal of the spindle motor is indicated by the red mark.

Adjustment of turntable height

1. Insert a 0.9mm clearance gauge (RZZ0297) between the turntable and loading base as shown in the figure.
2. Tighten the turntable set-screw by using a 1.27mm allen wrench.

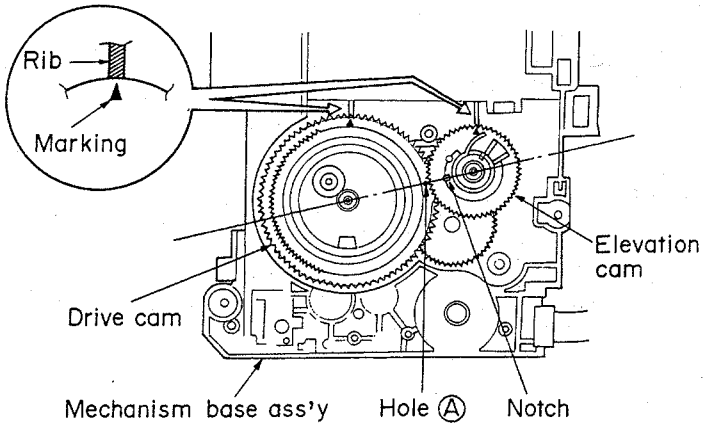
Caution:

Refer to turntable height adjustment (See page 25).



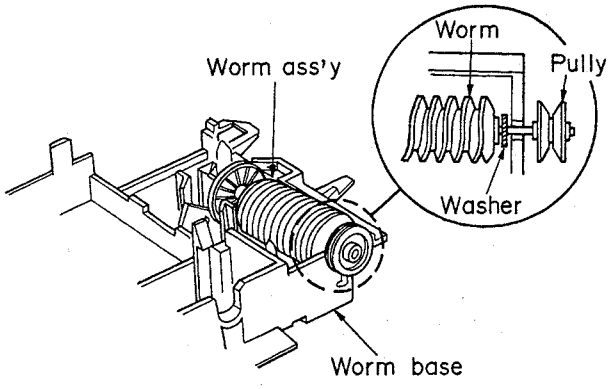
• Installation of the elevation cam and drive cam

1. Align the drive cam, the marking (▲) on the elevation cam, and the rib on the mechanism base ass'y.
2. Check that hole Ⓐ on the drive cam and the notch on the elevation cam are aligned in a straight line.



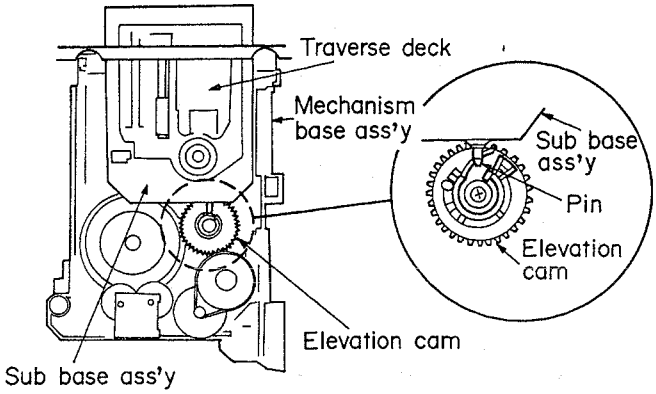
• Installation of the worm ass'y

When installing the worm ass'y onto the worm base, move the washer located between the worm and pulley next to the worm.



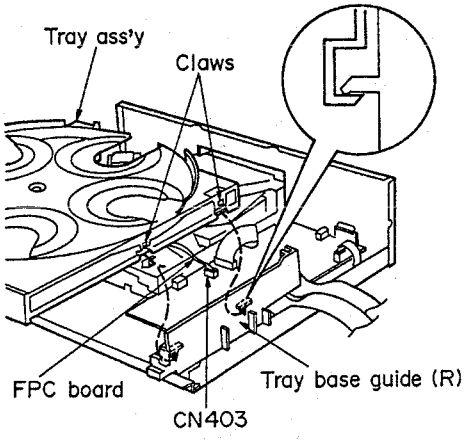
• Installation of the traverse deck

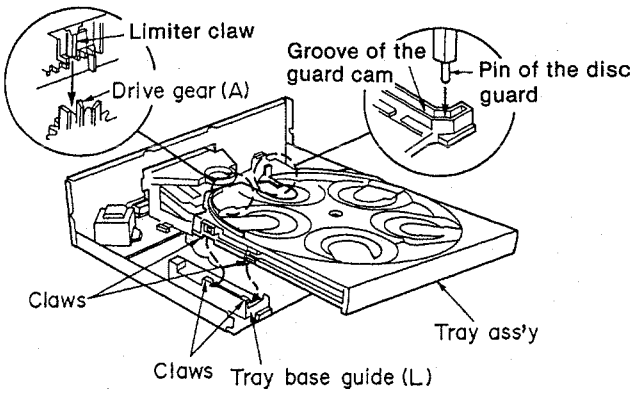
1. Position the elevation cam as shown in the figure on the right.
2. When the traverse deck is mounted on the mechanism base ass'y, check that the pin of the sub base ass'y is positioned at the slanted part of the rib on the elevation cam.



• Installation of the tray ass'y

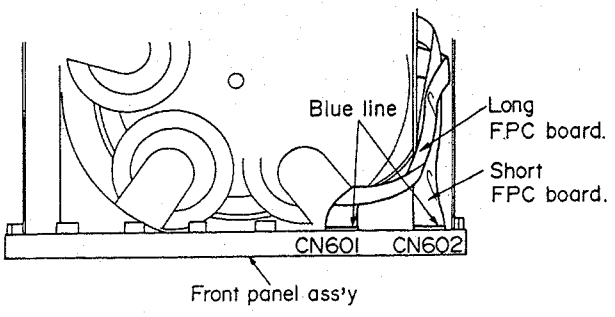
1. Attach the FPC board to the connector (CN403).
2. Fit the claws on the right side of the tray ass'y underneath the claws on the tray base guide (R).
3. Fit pin of the disc guard into groove of the guard cam.
4. Fit the limiter claw on the tray ass'y between the teeth of the drive gear (A).
5. Align the claws on the left side of the tray ass'y with the claws on the tray base guide (L) and push the tray ass'y until the claws catch.
6. After installing the tray ass'y, check that it moves smoothly.





• Notes on the installation of the FPC board for the front panel ass'y

1. With its blue line facing up, fully insert the FPC board until the foil is no longer exposed.
2. Insert the short FPC board first and then insert the long FPC board over it.



■ HOW TO CHECK THE MAIN AND SERVO P.C.B.

• Check the main P.C.B.

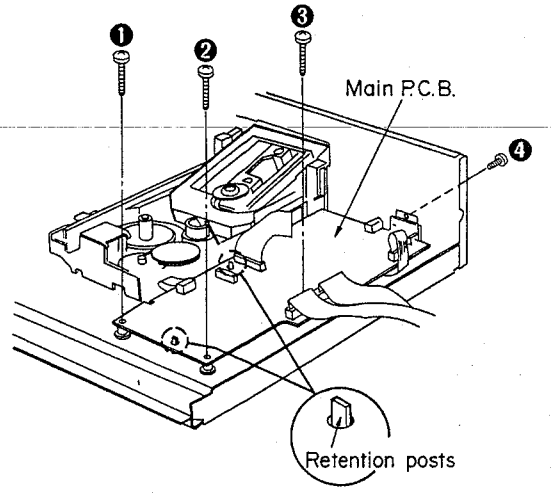


Fig. 1

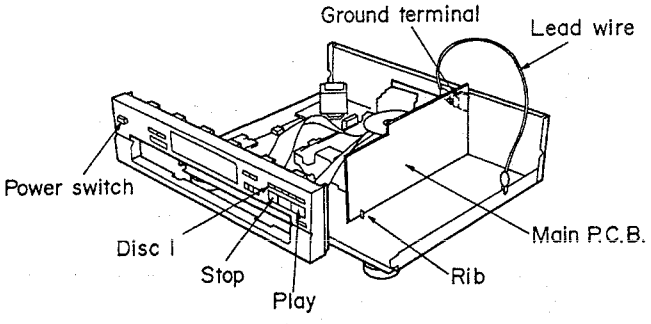


Fig. 3

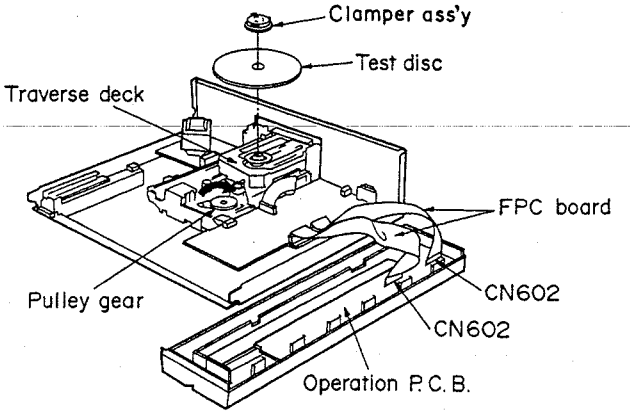


Fig. 2

1. Rotate the pulley gear in the direction of arrow until traverse deck comes up.
2. Place the test disc and secure it by using the clamper ass'y.
3. Connect the 2 FPC board (CN601, CN602) as shown in Fig. 2.
4. Remove the 4 screws (❶~❹) as shown in Fig. 1.
5. Lift the main P.C.B. off the retention post on the chassis.
6. Set up the main P.C.B.
7. Connect the main P.C.B. ground terminal (line out terminal) to the chassis ass'y with a lead wire.

How to play the disc

8. Set the unit in the test mode as follows: (hold the play, stop and disc 1 keys (3 keys) on and set the power switch to ON.)
9. Press the play key and play the test disc.
10. When checking the soldered surface of the main P.C.B., do as shown in Fig. 3.

• Check the servo P.C.B.

When checking the servo P.C.B., place the traverse deck sideways.
There are two ways (A) & (B) of securing the traverse deck as shown below.

(A) Securing the traverse deck to the chassis ass'y.

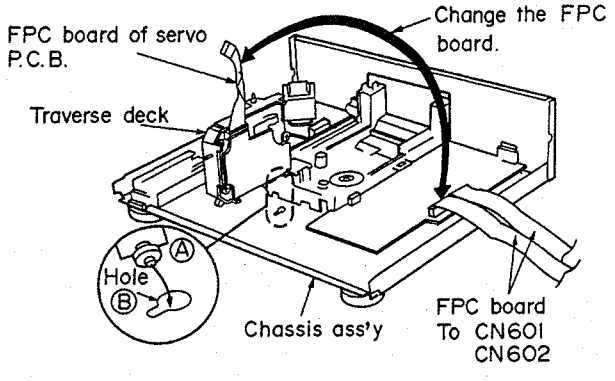


Fig. 4

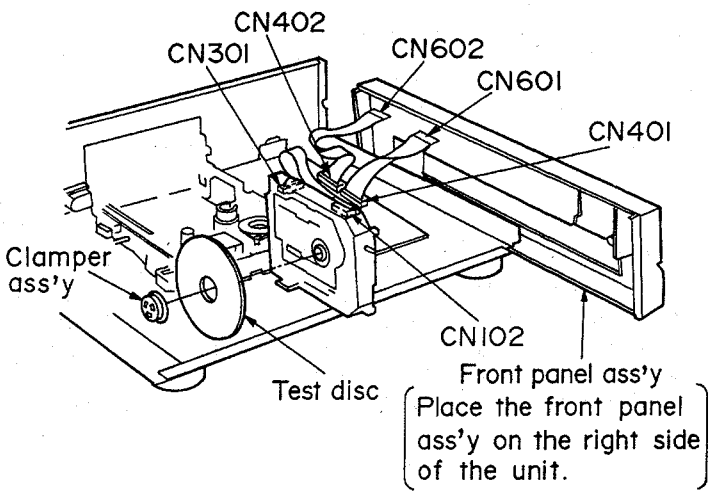


Fig. 5

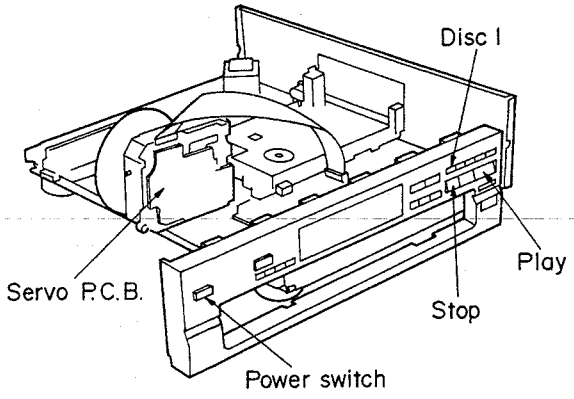


Fig. 6

1. Connect the FPC boards as shown in Fig. 5.
   [Between CN401 and CN601
   Between CN402 and CN602
   Between CN102 and CN301]
   Replace the FPC board for the servo P.C.B. (between CN102 and CN301) with the FPC board on the main P.C.B. (between CN401 and CN601 or between CN402 and CN602). (Reference the arrows in Fig. 4.)

(B) Securing the traverse deck to the mechanism base ass'y.

(The traverse deck cannot be secured unless the rear panel has been removed.)

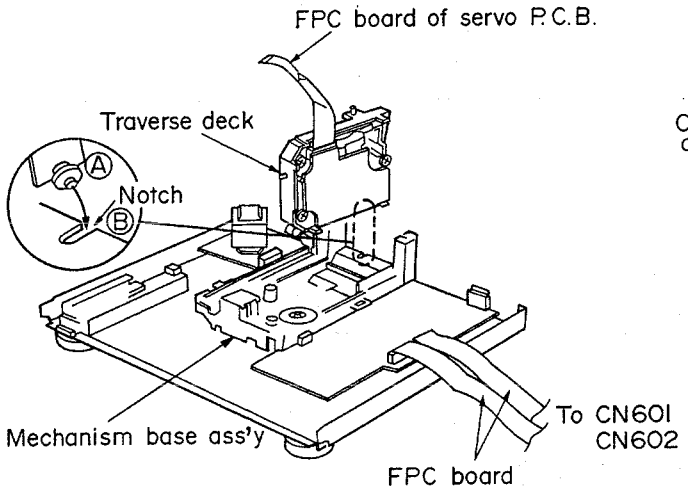


Fig. 7

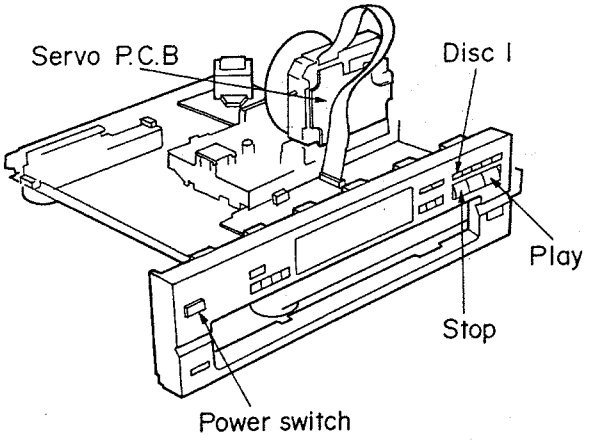


Fig. 9

Notes:

- The FPC board cannot be connected because it is too short when the traverse deck is secured sideways. Replace it with the long FPC board.
- After completing the check, restore the replaced FPC boards to their original positions.

2. Insert part Ⓐ of the traverse deck into hole Ⓑ of the chassis ass'y as shown in Fig. 4.

How to play the disc

3. Set the unit in the test mode as follows:
   (hold the play, stop and disc 1 keys (3 keys) on and set the power switch to ON.)
4. Press the play key and play the test disc.
5. When checking the soldered surface of the servo P.C.B., do as shown in Fig. 6.

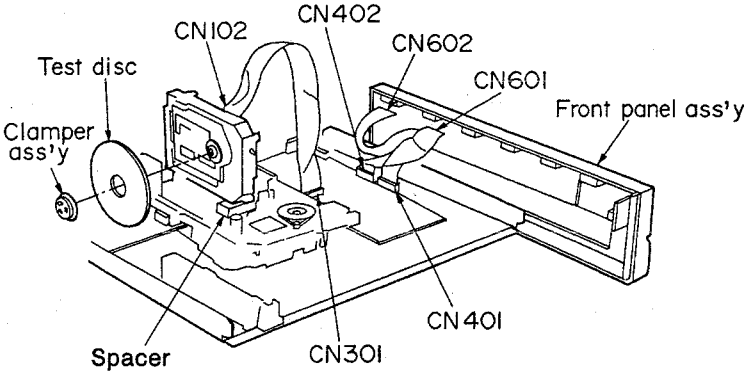


Fig. 8

1. Connect the FPC boards in the same manner as described in (A) above.
2. Insert part Ⓐ of the traverse deck into notch Ⓑ of the mechanism base ass'y as shown in Fig. 7.
3. Install the spacer so that the traverse deck is horizontal as shown in Fig. 8.

How to play the disc

4. Set the unit in the test mode as follows:
   (hold the play, stop and disc 1 keys (3 keys) on and set the power switch to ON.)
5. Press the play key and play the test disc.
6. When checking the soldered surface of the servo P.C.B., do as shown in Fig. 9.

■ OPERATING THE UNIT WITHOUT THE FRONT PANEL ASS'Y (OPERATING P.C.B. AND KEYS)

The main operations of the unit can be performed by shorting jumper wires on the main P.C.B. even if the FPC board from the control panel is not connected to the main P.C.B.

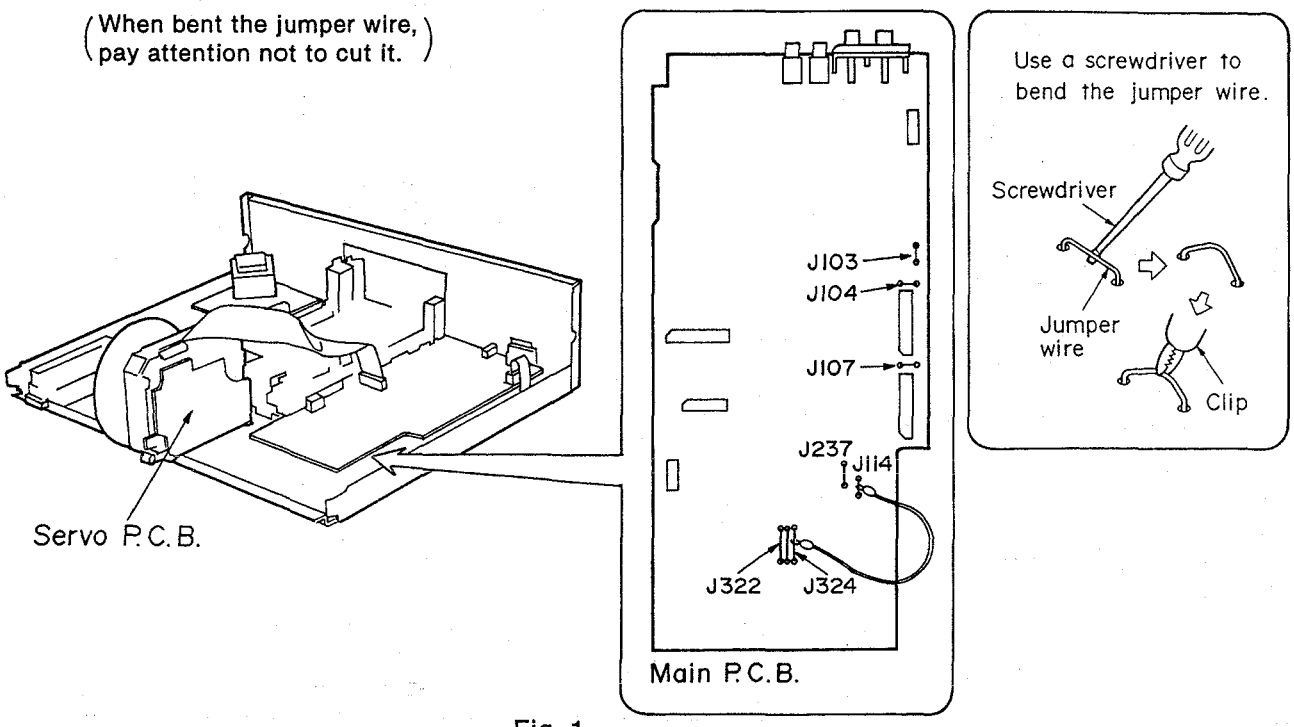


Fig. 1

1. Short the jumpers on the main P.C.B.
   [a. J324–J114 (equivalent to pressing the PLAY key)
   b. J322–J114 (equivalent to pressing the STOP key)
   c. J324–J237 (equivalent to pressing the DISC 1 key)]
2. Shorting J103 to J104 turns the power ON.
3. After turning on the power, open the 3 shorted jumpers (a to c) in 1.
4. Momentarily short the jumpers shown below as needed. (Fig. 1)
   - To PLAY, short J324 to J114 (equivalent to pressing the PLAY key)
   - To FWD, short J322 to J107 (equivalent to pressing the ▶▶I SKIP key)
   - To REW, short J324 to J107 (equivalent to pressing the I◀◀ SKIP key)
   - To STOP, short J322 to J114 (equivalent to pressing the STOP key)
5. The operations for the 4 modes above can be performed.

■ DISPLAY FUNCTION OF AUTOMATICALLY-ADJUSTED RESULTS (SELF-CHECK FUNCTION)

The unit contains a function which displays the result of the automatically adjustment of the servo circuits (tracking, forcus servo, etc.) as an error code on the FL display.
The error code display serves as a repair guide showing the automatically adjustment circuit is at fault. The procedures for displaying the error codes are given below.

• Procedures to display the error code

(1) Procedure to display the error code before disassembly (finished unit)

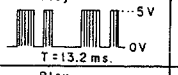
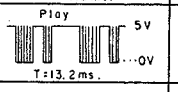
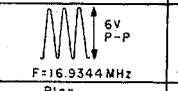
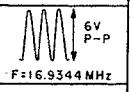
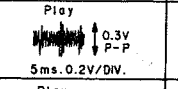
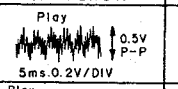
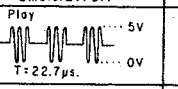
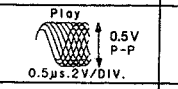
1. When the [POWER] key is pressed while holding down the [STOP (■)], [PAUSE (❚❚)] and [PLAY (▶)] keys simultaneously, the FL display illuminates, release the power turns on.
2. When the FL display illuminates, release the [STOP (■)], [PAUSE (❚❚)] and [PLAY (▶)] keys.
3. Press the [OPEN/CLOSE (▲)] key to open the disc tray and load the test disc (SZZP1054C).
4. Press the [PLAY (▶)] key to start the play operation.
5. After the time display appears, press the [TIME MODE] key twice to display the error code. (e.g. **E-0**)
6. The error code display can be used as a repair guide showing which servo circuit is at fault. (See Error Code Based Troubleshooting.)

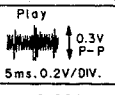
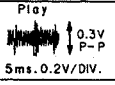
(2) Procedure to display the error code when disassembled

1. Prepare the unit as described in "How to Check the Servo P.C.B." on page 16.
2. Press the [POWER] key while holding down the [STOP (■)], [PLAY (▶)] and [DISC 1] keys simultaneously.
3. When the FL display illuminates, release the [STOP (■)], [PLAY (▶)] and [DISC 1] keys.
4. Load the test disc (SZZP1054C) on the turntable and secure it with the clamper ass'y.
5. Perform steps 4 and 5 in section (1) above.

• Error code based troubleshooting

※ The unit is satisfactory if the error code is **E-0** of **E-2**.
※ Before testing, check that the test disc is free of scratches and dirt and optical pickup is clean.

FL error code display	Symptom	Probable cause	Signal to check		Normal the values of voltage and waveform	
			Signal name	Location	PLAY	STOP
E-1	Incomplete focus, tracking or offset adjustment	1. Data transfer with IC401 2. IC102 setup condition	MDATA	IC102 ㉗ pin		0V
			MCLK	IC102 ㉘ pin		4.9V
			MLD	IC102 ㉙ pin		
			SENSE	IC102 ㉚ pin	0V	4.9V
			/RST	IC102 ㉝ pin	4.6V	4.6V
			XI	IC102 ㉞ pin		
E-3 **E-5** **E-7** **E-9** **E-B** **E-D** **E-F**	Disc cannot be played reliably.	1. Scratched or dirty disc 2. Focus and tracking servo circuits 3. Spindle drive circuit 4. Optical pickup	FE	IC102 ⑩ pin		2.5V
			TE	IC102 ⑨ pin		2.5V
			FOD	IC102 ⑳ pin		2.5V
			TRD	IC102 ㉑ pin		
			KICK	IC102 ㉒ pin	2.5V	2.5V
			VR1	IC102 ⑫ pin	3.9V	3.9V
			VR2	IC102 ⑪ pin	0.9V	0.9V
			/FLOCK	IC102 ㉛ pin	0V	4.9V
			/RF DET	IC102 ③ pin	0V	4.7V
			RF	TJ101		2.5V
			STAT	IC301 ㊼ pin	4.9V	0V

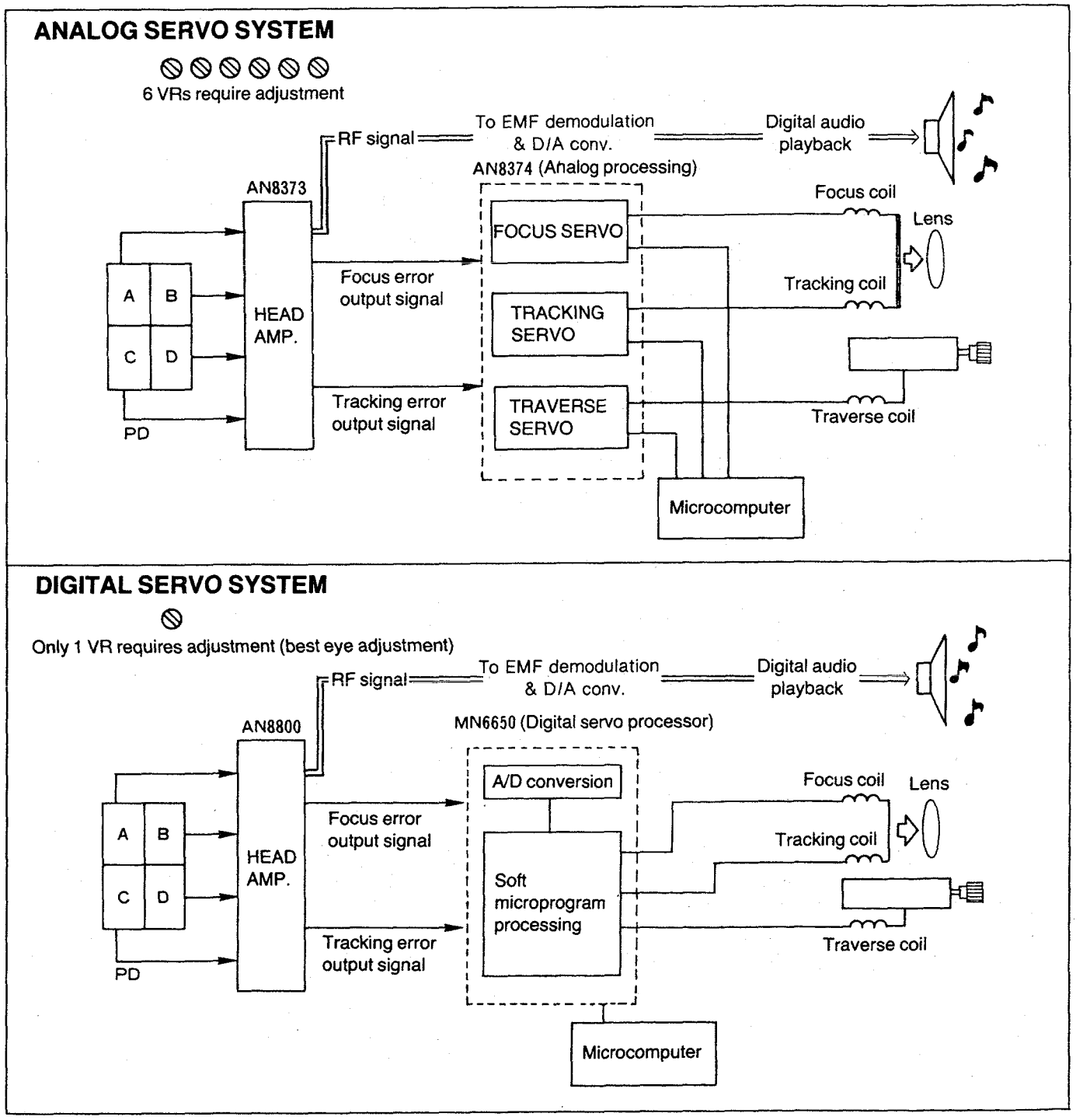
FL error code display	Symptom	Probable cause	Signal to check		Normal the values of voltage and waveform	
			Signal name	Location	PLAY	STOP
E-4 **E-6**	Incomplete focus gain adjustment	1. Scratched or dirty disc 2. Focus servo circuit 3. Optical pickup	FE	IC102 ⑩ pin		2.5V
			VR1	IC102 ⑫ pin	3.9V	3.9V
			VR2	IC102 ⑪ pin	0.9V	0.9V
			OFT	IC102 ⑤ pin	0V	4.7V
			/TLOCK	IC102 ㉜ pin	0V	4.9V
E-8 **E-A** ※ See note	Incomplete tracking gain adjustment	1. Scratched or dirty disc 2. Tracking servo circuit 3. Optical pickup	TE	IC102 ⑨ pin		2.5V
			VR1	IC102 ⑫ pin	3.9V	3.9V
			VR2	IC102 ⑪ pin	0.9V	0.9V
			OFT	IC102 ⑤ pin	0V	4.7V
			/TLOCK	IC102 ㉜ pin	0V	4.9V
E-C **E-E**	See error codes **E-4**, **E-6**, **E-8** and **E-A**	See error codes **E-4**, **E-6**, **E-8** and **E-A**	FE	IC102 ⑩ pin		2.5V
			TE	IC102 ⑨ pin		2.5V
			VR1	IC102 ⑫ pin	3.9V	3.9V
			VR2	IC102 ⑪ pin	0.9V	0.9V
			OFT	IC102 ⑤ pin	0V	4.7V
			/TLOCK	IC102 ㉜ pin	0V	4.9V

※ **Note:** For a unit showing error code **E-8** or **E-A**, check the error code several times. If error code **E-0** or **E-2** appears, the unit can be assumed to be satisfactory.

■ DIGITAL SERVO SYSTEM

The newly-developed digital servo system is adopted in the servo circuit of the unit's CD player instead of the ordinary analog servo system.

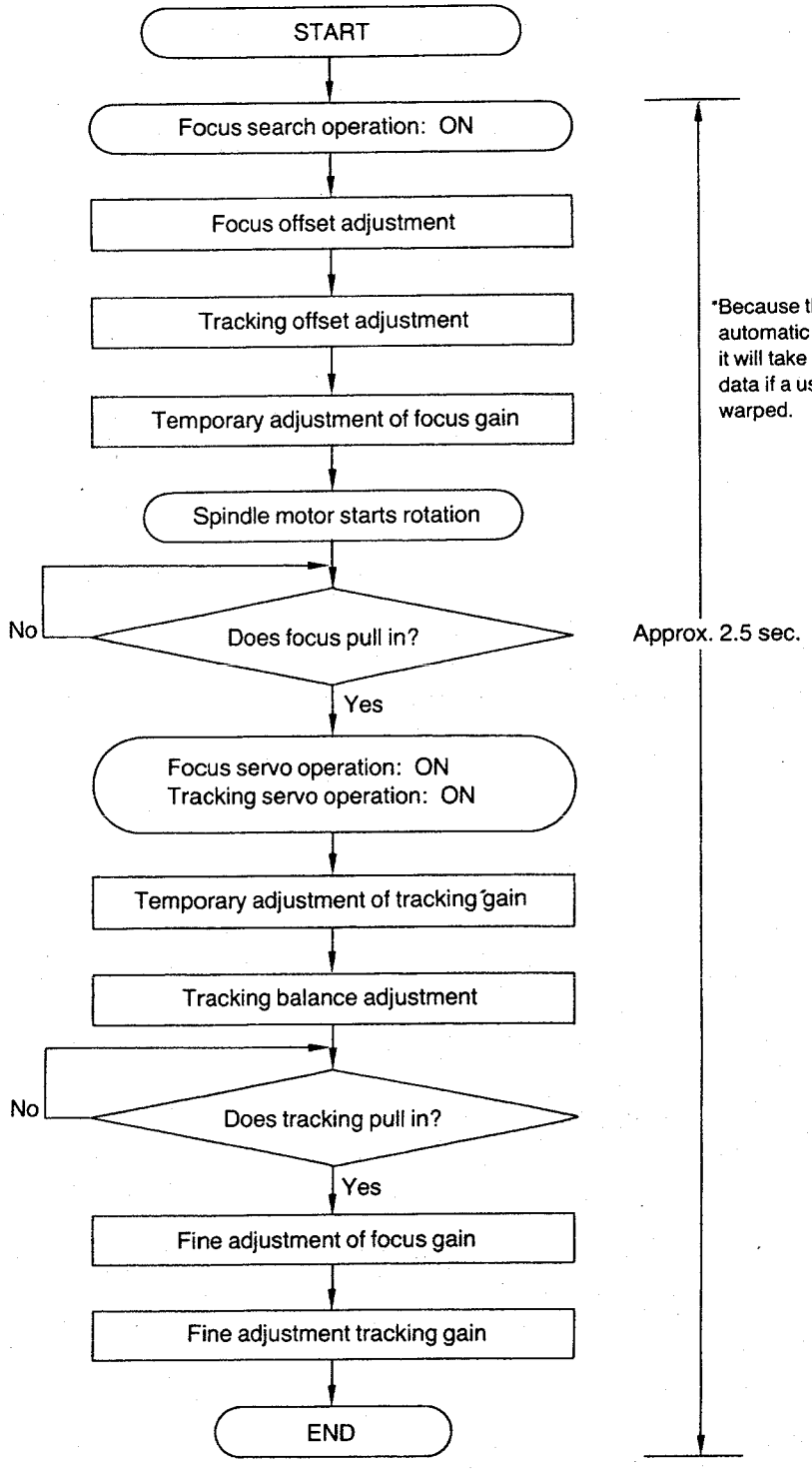
1. The diagrams shown below represent differences between the analog servo and digital servo systems. The HEAD AMP. output signals (i.e., focus error and tracksing error output signals) are analog. These analog signals are converted to the 8-bit digital signals through the MN6650. The MN6650 performs the following adjustments automatically; focus offset, tracking offset, focus gain, tracking gain, and tracking balance adjustments. The outputs from the MN6650 such as the focus coil driving signal, tracking coil driving signal, and traverse motor driving signal are converted to analog signals again and sent to the coils and motor to perform proper servo control for a disc.



2. The servo processor IC MN6650 of the newly-developed digital servo circuit automatically performs the following adjustments which were originally adjusted manually in the conventional analog servo circuit:
(1) Focus offset, (2) Tracking offset, (3) Focus gain, (4) Tracking gain, and (5) Tracking balance. Therefore, you do not have to perform the above-mentioned electrical adjustments. The unit optimizes the servo for each loaded disc.
[You must perform the best eye (PD balance) adjustment manually.]

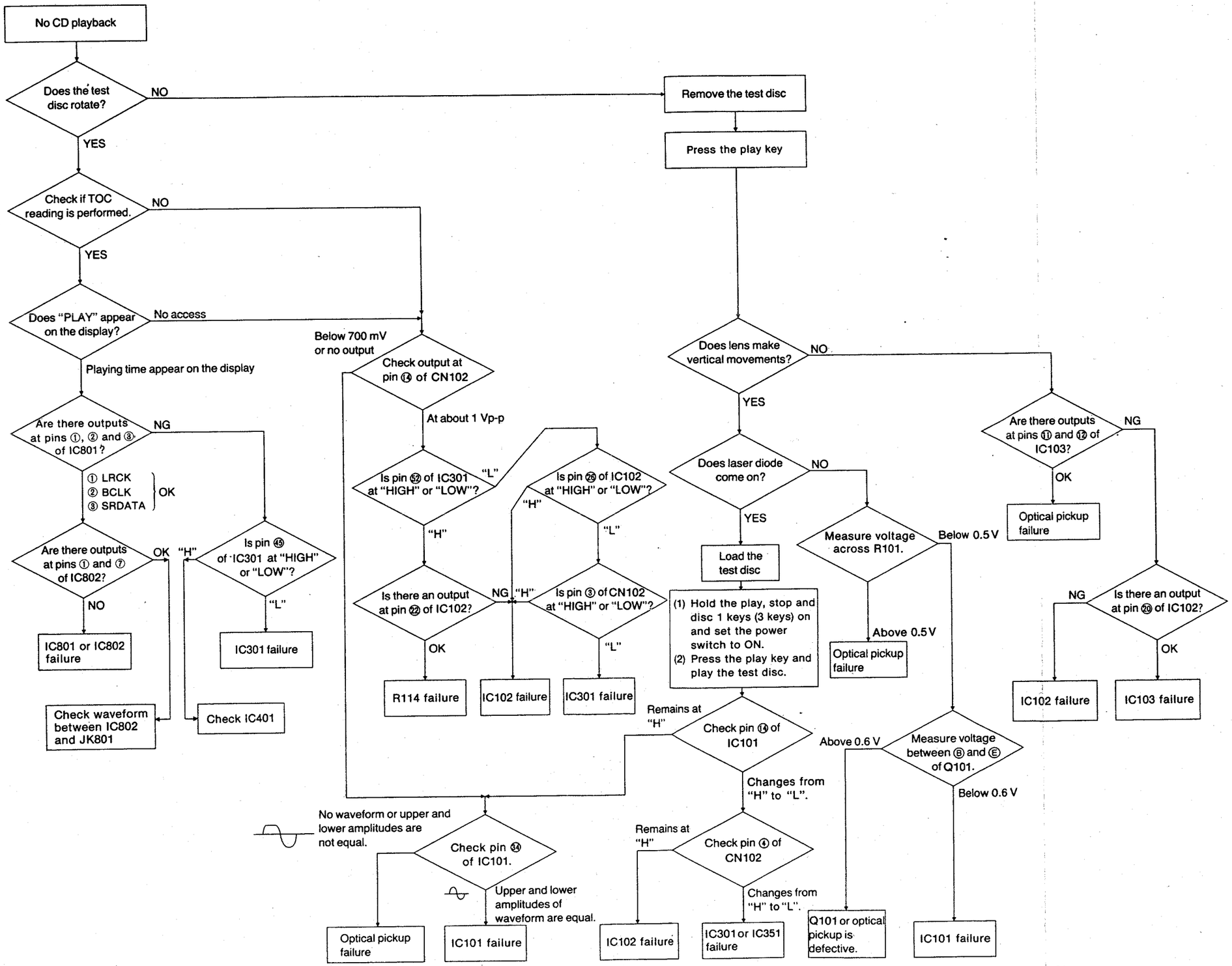
The following flow chart shows the sequence of automatic adjustments.

•Flow chart on automatic adjustment sequence



*Because the microcomputer precisely performs automatic adjustments as shown in the flow chart, it will take approx. 5 seconds to finish reading TOC data if a used disc is eccentric one or its surface is warped.

■ TROUBLESHOOTING GUIDE



■ MEASUREMENTS AND ADJUSTMENTS

Warning: This product uses a laser diode. Refer to caution statements on page 3.

ACHTUNG: • Die lasereinheit nicht zerlegen.
• Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

Measuring Instruments and Special Tools

* Test discs
1. Playability test disc (SZZP1054C)
2. Uneven test disc (SZZP1056C)

* Musical program disc (ordinary)
* Dual-beam oscilloscope with bandwidth of 30MHz or better (with EXT. trigger and 1:1 probe).
* Allen wrench (M2.0) (SZZP1101C)
* Allen wrench (M1.27)
* 0.9mm clearance gauge (RZZ0297)
* Filter
* Lock paint (RZZ0L01)

PREPARATION

1. Remove the cabinet and front panel ass'y (refer to "disassembly instructions" Ref. No. 1, 2).
2. Set the power switch to ON and press the open/close key to close the loading drawer.
3. Press the play key and when the traverse deck reaches it's height position, set the power switch to OFF.
4. Remove the tray ass'y (refer to "disassembly instructions" Ref. No. 3).
5. Remove the clamp plate, yoke, magnet and clamper (refer to "disassembly instructions" Ref. No. 8, 9).
6. Place the test disc and secure it by using clamper ass'y. (Refer to Fig. 1)
(refer to "disassembly instructions" Ref. No. 9).
7. Set the unit in the test mode as follows:
(hold the play, stop and disc 1 keys (3 keys) on and set the power switch to ON.)
8. Press the play key and play the test disc.
9. Follow the adjustment procedure.

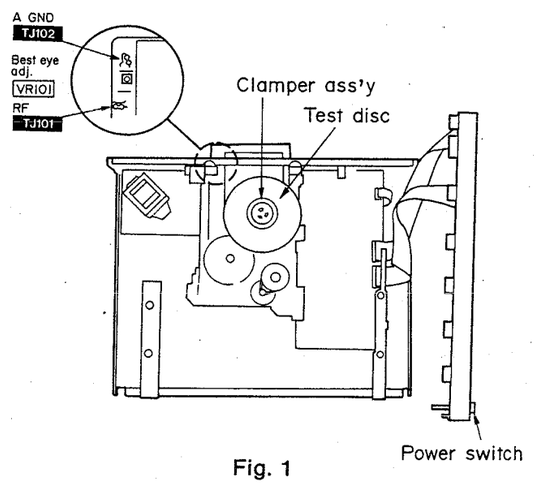


Fig. 1

Adjusting Procedure

* If you have replaced the optical pickup, spindle motor, or turntable, do the following adjustment:

(1) TURNTABLE HEIGHT ADJUSTMENT

1. Insert the 0.9mm clearance gauge (RZZ0297) between the turntable and the loading base. (Refer to Fig. 2).
2. Tighten the turntable retention screw with the 1.27mm allen wrench.
3. Connect the oscilloscope's CH. 1 probe across TP1 (+) and TP2 (−) terminal via a filter (Refer to Fig. 3).

Note: For the connection of oscilloscope's CH. 1 probe to servo P.C.B. on foil side, refer to fig. 2.
Oscilloscope setting: VOLT 500mV
SWEEP..... 5ms.
Input coupling..... DC

4. Adjust oscilloscope's DC zero balance.
5. Switch the play power **ON**, and play the test disc (SZZP1054C).
6. Measure the voltage amplitude of the signal on the oscilloscope.

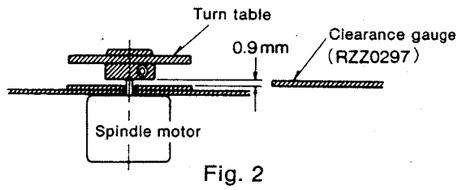


Fig. 2

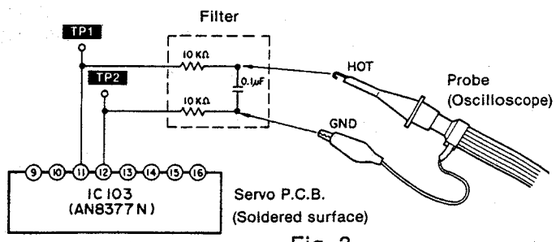


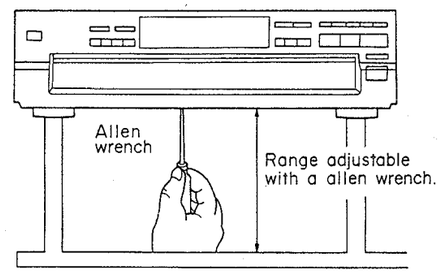
Fig. 3

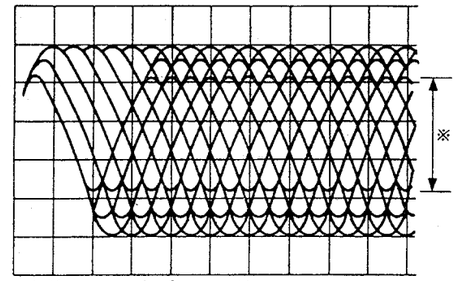
7. Adjust the height until the voltage is **0±1.0V**.
If the voltage exceeds **+1.0V**, lower turntable.
If the voltage is below **−1.0V**, elevate the turn table.

Note: Mesure the voltage as 0V as possible.

(2) MECHANICAL ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across TJ101 (+) and TJ102 (GND) on the servo P.C.B. (Refer to Fig. 4 on page 19)
Oscilloscope setting: VOLT 100mV
SWEEP..... 0.5μs.
Input coupling..... AC
2. Switch the player power **ON**, and play track **7** on the test disc (SZZP1056C).
(Playing any other track will prevent the HEX screws from being accessed.)
3. Leave the player in play mode and place it as shown Fig. 3 on page 19.
4. Alternately adjust the two HEX screws with the 2.0mm allen wrench (SZZP1101C) until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched. (Refer to Fig. 4)
5. After completing the adjustment, lock the HEX screws with lock paint (RZZ0L01).





※ Most stretched eye pattern.

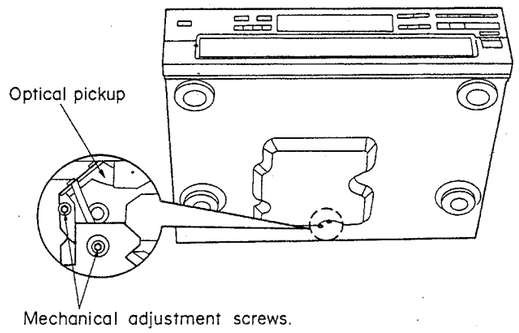
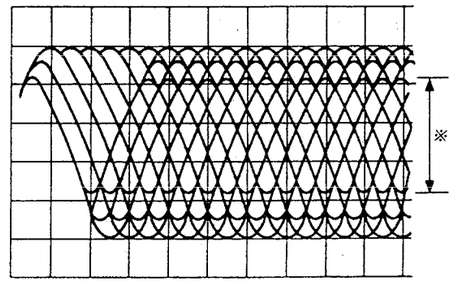


Fig. 4

(3) BEST EYE (PD BALANCE) ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across TJ101 (+) and TJ102 (GND) on the servo P.C.B. (Refer to Fig. 4 on page 19)
Oscilloscope setting: VOLT 100mV
SWEEP..... 0.5μs.
Input coupling..... AC
2. Switch the player power **ON**, and play the 1kHz (track 1) on the test disc (SZZP1054C).
3. Adjust **VR101** until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched. (Refer to Fig. 5)



※ Most stretched eye pattern.

Fig. 5

(4) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

* **Checking Skip Search**

1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

* **Checking Manual Search**

1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

* **Checking Playability**

1. Play the 0.7mm black dot and the 0.7mm wedge on the playability test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc (SZZP1056C) and verify that no sound skip or noise occurs.

■ TERMINAL FUNCTION OF IC'S

• IC101 (AN8800SCE2): Servo amp

Pin No.	Mark	I/O Division	Function
1	LDG	I	APC loop gain select
2	LDP	I	APC monitor PD polarity select (Not used, open)
3	LD	O	Laser power auto control output
4	LPD	I	LD power monitor PD signal
5	GND	—	GND terminal
6	LDON	I	LD APC ON/OFF ("H": ON, "L": OFF)
7	AMP I	I	RF signal (X30 amp)
8	AMP O	O	
9	RF IN	I	RF AGC signal input
10	RF EQ	—	GND terminal
11	C. AGC	I	AGC detection capacitor input
12	ARF	O	RF signal output
13	C. SBDO	I	Dropout detection capacitor input
14	RF DET	O	RF detection signal ("L": detecting)
15	BDO	O	Dropout detection output
16	V_{CC}	I	Power supply terminal
17	SDO	O	Dropout detection pulse output
18	VAD+	O	Power supply terminal for A/D converter (+)
19	VREF	O	Reference voltage output
20	VAD−	O	Power supply terminal for A/D converter (−)
21	OFTR	O	Off track detection ("H": det.)

Pin No.	Mark	I/O Division	Function
22	PLAY	I	Play signal ("H": ON, "L": OFF)
23	WVEL	I	Double velocity ("H": double, "L": single)
24	TES	I	Tracking error shunt ("H": shunt, "L": output)
25	PTO	O	Potentio amp output
26	PTI	I	Potentio amp input
27	PBO	O	Potentio buffer output
28	POT	I	Potentio buffer input
29	CROSS	O	Tracking error zero cross output
30	TE	O	Tracking error signal
31	TE BAL	I	Oscillation det. signal
32	TBAL	I	Tracking balance adj. input
33	VDET	O	Oscillation det. signal ("H": det.)
34	FE	O	Focusing error signal
35	FBL 2	I	Focusing balance 2
36	FBL 1	I	Focusing balance 1
37	V_{CC}	I	Power supply terminal
38	GND	—	GND terminal
39	PDBD	I	Photo detector Bch input with delay
40	PDA	I	Photo detector Ach input without delay
41	PDB	I	Photo detector Ach input with delay
42	PDAD	I	Photo detector Bch input without delay

• IC102 (MN6650A): Digital servo processor

Pin No.	Mark	I/O Division	Function
1	TES	O	Tracking error shunt signal ("H": shunt)
2	PLAY	O	Play signal ("H": play)
3	/RFDET	I	RF det. signal ("L": det.)
4	DO	I	Dropout signal ("H": dropout)
5	OFT	I	Off track signal ("H": off track)
6	ARF	I	RF signal input
7	WVEL	O	Double velocity status signal ("H": double)
8	PBO	I	Potensio buffer signal (analog input)
9	TE	I	Tracking error signal (analog input)
10	FE	I	Focus error signal (analog input)
11	VR2	I	Reference voltage for A/D (Low)
12	VR1	I	Reference voltage for A/D (High)
13	LDON	O	Laser power control ("H": ON)
14	V_{SS}	—	GND terminal
15	AV_{SS}	—	GND terminal
16	AV_{DD}	I	Power supply terminal
17	V_{DD}	I	Power supply terminal
18	TRV	O	Traverse servo control output
19	TVD	O	Traverse drive signal output
20	FOD	O	Focus drive signal output
21	TRD	O	Tracking drive signal output

Pin No.	Mark	I/O Division	Function
22	KICK	O	Kick pulse output
23	/TEST	I	Test terminal
24	V_{SS}	—	GND terminal
25	CLVS	I	Spindle servo phase synchro signal ("H": CLV, "L": Rough servo)
26	/TRON	O	Tracking servo ON signal ("L": ON)
27	MDATA	I	Command data signal
28	MCLK	I	Command clock signal
29	MLD	I	Command load signal ("L": LOAD)
30	SENSE	O	Sense signal
31	/FLOCK	O	Optical servo condition (focus) output
32	/TLOCK	O	Optical servo condition (tracking) output
33	/RST	I	Reset signal ("L": reset)
34	XI	I	Clock input (f=16.9344MHz)
35 ~ 38	T0 ~ T3	O	Test terminal (Ordinaly: open)
39 ~ 41	T4 ~ T6	I	Test terminal (Ordinaly: L)
42	VDET	I	Oscillation det. signal ("H": det.)
43	TBAL	O	Tracking balance adj. output
44	TRCRS	I	Track cross signal input

• IC103 (AN8377N): Traverse motor drive

Pin No.	Mark	I/O Division	Function
1	P V_{CC}	I	Drive power supply
2	V_{CC}	I	Power supply terminal
3	TB	O	External transistor base driving output
4	VMON	O	Voltage output (connected to GND)
5	TVD1	I	Traverse error signal input
6	FD1	I	Focus error signal input
7	TD1	I	Tracking error signal input
8	VREF	I	Reference voltage input

Pin No.	Mark	I/O Division	Function
9	TD−	O	Non-inverting output of focus driver
10	TD+	O	Inverting output of focus driver
11	FD−	O	Non-inverting output of tracking driver
12	FD+	O	Inverting output of tracking driver
13	TVD−	O	Non-inverting output of traverse driver
14	TVD+	O	Inverting output of driver
15	RESET	O	Releset signal output (Not used, open)
16	PC	I	PC input (connect to GND)

• IC801 (MN6475A-T1): Digital filter & D/A converter

Pin No.	Mark	I/O Division	Function
1	LRCK	I	L/R discriminating signal
2	BCLK	I	Serial bit clock input
3	SRDATA	I	Serial data output (MSB first)
4	COT 1	I	Test terminal (Ordinaly: L)
5	COT 2		
6	TEST		
7	V_{DD}	I	Digital power supply terminal
8	X2	O	Clock terminal (F=33.8688MHz)
9	X1	I	
10	DV_{SS}	—	Digital GND terminal
11	DV_{DD} L	I	Analog power supply terminal 1
12	OUT. L	O	Analog signal output 1
13	AV_{SS} L	—	Analog GND terminal
14	AV_{SS} R		

Pin No.	Mark	I/O Division	Function
15	OUT. R	O	Analog signal output 2
16	AV_{DD} R	I	Analog power supply terminal 2
17	/RST	I	Reset signal input (Active: L)
18	PWM	O	PWM output (TP..."H": output "L": High impedance) (Not used, open)
19	TP	I	Test terminal (ordinaly: L)
20	WVEL	I	Double velocity ("H": double, "L": single)
21	DEMPH	I	Digital de -emphasis ON/OFF ("H": ON)
22	CSEL	I	Clock frequency select of CK 192 (Not used, connected to GND)
23	1972FS	O	192fs (8.4672MHz) signal output (Not used, open)
24	384FS	O	Clock output terminal (384FS=16.9344MHz)

• IC301 (MN6626): Digital signal processor

Pin No.	Mark	I/O Division	Function
1	AVSS	—	GND terminal
2	IREF	I	Reference current input
3	ARF	I	RF signal input
4	DRF	I	DSL bias terminal (Not used, open)
5	DSLF	I/O	DSL loop filter sterminal
6	PLLF	I/O	PLL loop filter terminal
7	AVDD	I	Power supply terminal
8	RSEL	I	RF signal polarity setting terminal (Not used, connected to VDD)
9 ∫ 16	TBUS7 ∫ TBUS0	O	Test terminal
17	FLAG	O	Flag terminal (Not used, open)
18	IPFLAG	O	Interpolation flag terminal (Not used, open)
19	FCLK	O	Crystal frame clock (Not used, open)
20	BYTCK	O	Byte clock (Not used, open)
21	WDCK	O	Word clock (Not used, open)
22	/RST	I	Reset terminal
23	TX	O	Digital audio signal (Not used, open)
24	LDG	O	Lch deglitch signal (Not used, open)
25	RDG	O	Rch deglitch signal (Not used, open)
26	SRDATA	O	Serial data output (MSB first)
27	SCK	O	Serial bit clock output
28	LRCK	O	L/R discriminating signal
29	XCK	O	Crystal OSC terminal (f=16.9344MHz) (Not used, open)
30	PMCK	O	Frequency division clock signal (Not used, open) ($f=\frac{1}{192}\times CK=88.2kHz$)
31	CSEL	I	Test terminal (Connected to GND)
32	PSEL		
33	X1	I	Crystal OSC terminal (f=16.9344MHz)
34	X2	O	Crystal OSC terminal (f=16.9344MHz) (Not used, open)
35	VSS	—	GND terminal
36	SUBQ	O	Sub-code Q data
37	SQCK	I	Sub-code Q register clock

Pin No.	Mark	I/O Division	Function
38	/CLDCK	O	Sub-code frame clock (f=735kHz) (Not used, open)
39	BLKCK	O	Sub-code block clock (f=75Hz)
40	DEMPH	O	De-emphasis ON signal ("H": ON)
41	MEMP	I	Emphasis signal
42	MLD	I	Command load signal ("L": LOAD)
43	MCLK	I	Command clock signal
44	MDATA	I	Command data signal
45	D MUTE	I	Muting input ("H": MUTE)
46	SMCK	O	System clock (f=4.2336MHz)
47	STAT	O	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQOK)
48	CRC	O	Sub-code CRC check terminal ("H": OK, "L" NG) (Not used, open)
49	SUBC	O	Sub-code serial output data (Not used, open)
50	SBCK	I	Sub-code serial output clock (Not used, open)
51	/TRON	I	Tracking servo ON signal ("L": ON)
52	CLVS	O	Turntable servo phase synchro signal ("H": CLV, "L": Rough servo)
53	PC	O	Turntable motor ON signal ("L": ON)
54	ECM	O	Turntable motor drive signal (Forced mode)
55	ECS	O	Turntable motor drive signal (Servo error signal)
56	VDD	I	Power supply terminal
57	/TEST	I	Test terminal (Normal: "H")
58	SSEL	I	"SUBQ" terminal mode select ("H": Q code buffer)
59	MSEL	I	"SMCK" terminal frequency select ("L": SMCK=4.2336MHz)
60	RESY	O	Re-synchronizing signal of frame sync. (Not used, open)
61	DO	I	Drop-out detection signal ("H": Drop-out)
62	EFM	O	EFM signal (Not used, open)
63	PCK	O	PLL extract clock (f=4.3218MHz) (Not used, open)
64	PDO	O	Phase comparated signal of EFM and PCK (Not used, open)

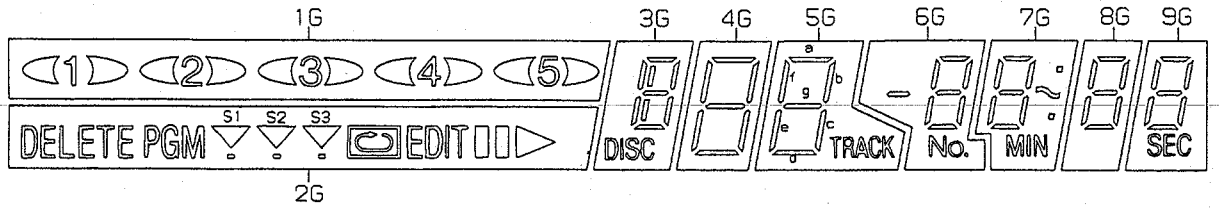
• IC401 (MN187204PMD1): System control & FL drive

Pin No.	Mark	I/O Division	Function
1 ⟆ 7	S7 ⟆ S1	O	FL segment signal
8	V_{PP}	I	Power supply terminal
9	V_{DD}		
10	OSC2	I	(Not used, open)
11	OSC1	I	Clock input terminal (4.2336 MHz)
12	V_{SS}	—	GND terminal
13	XI	I	(Not used, connected to GND)
14	XO	O	(Not used, open)
15	SYNC	O	Synchro edit control signal (Not used, open)
16	REC. E	I	Synchro edit control signal
17	LOAD	O	Motor control signal
18	TURN		
19	DIRECT		
20	DISC	I	Disc det. terminal
21	/TLOCK	I	Optical servo condition (tracking) input
22	STAT	I	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQOK)
23	REMOCON	I	Remote control signal
24	SPEED	I	Loading motor speed sensor signal
25	PWM	O	Motor control signal
26	SENSE	I	Sense signal

Pin No.	Mark	I/O Division	Function
27	DMUTE	O	Muting control signal
28	/FLOCK	I	Optical servo condition (focus) input
29	/RESET	I	Reset signal input
30	MCLK	O	Command clock signal
31	MLD	O	Command load signal ("L": LOAD)
32	MDATA	O	Command data signal
33	SQCK	O	Sub-code Q register clock
34	SUBQ	I	Sub-code Q data
35	BLKCK	I	Sub-code block (f=75 Hz)
36	NC	—	Not connected
37	CM	—	Not used, connected to GND
38 ⟆ 45	KEYIN8 ⟆ KEYIN1	I	Key return signal
46 ⟆ 54	G1 ⟆ G9	O	FL grid signal
55	/RESET	O	Reset signal for servo
56	OPEN	I	Open detect terminal
57	KEYOUT5	—	(Not used, open)
58 ⟆ 61	KEYOUT4 ⟆ KEYOUT1	O	Key scan signal
62 ⟆ 64	S10 ⟆ S8	O	FL segment signal

■ INTERNAL CONNECTION OF FL

• Grid connection diagram



• Anode connection table

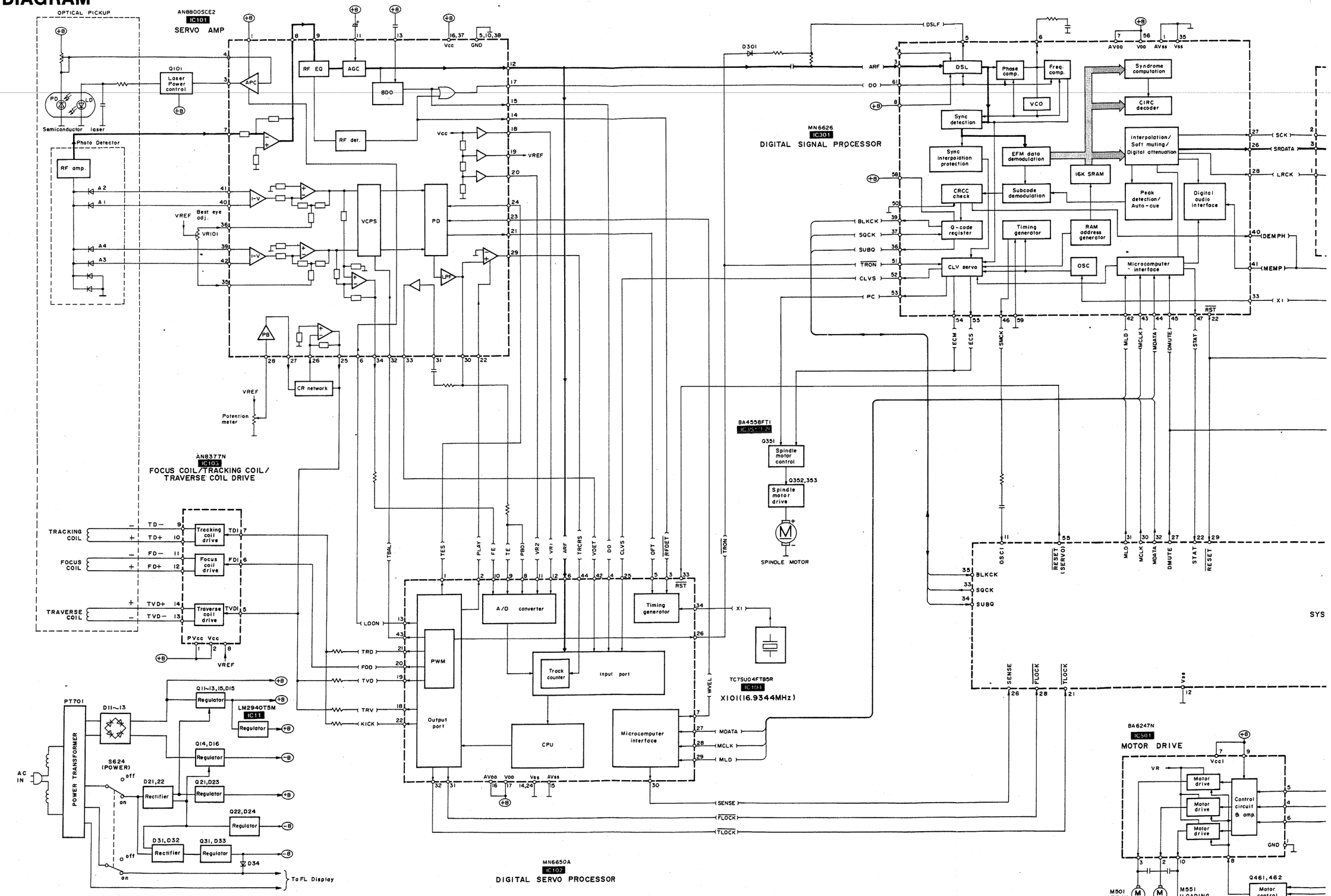
	1G	2G	3G	4G	5G	6G	7G	8G	9G
P1	(1)	▷	a	a	a	a	a	a	a
P2	(2)	▯▯	b	b	b	b	b	b	b
P3	(3)	DELETE	c	c	c	c	c	c	c
P4	(4)	EDIT	d	d	d	d	d	d	d
P5	(5)	⊂⊃	e	e	e	e	e	e	e
P6	1	S3	f	f	f	f	f	f	f
P7	2	S2	g	g	g	g	g	g	g
P8	3	S1	DISC	–	TRACK	–	MIN	–	SEC
P9	4	PGM	//	–	–	No.	▫▫	–	–
P10	5	- - -	–	–	–	–	~	–	–

• Pin connection

PIN NO.	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F1	F1	NP	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	NC	NC	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NC	NC	NC	9G	8G	7G	6G	5G	4G	3G	2G	1G	NP	NP	F2	F2

NOTE 1) F1,F2 --- Filament
2) NP ------ No pin
3) NC ------ No connection
4) 1G~9G --- Grid

■ BLOCK DIAGRAM



MN6475A-TI
IC801
DIGITAL FILTER & D/A CONVERTER

MN6626
IC301
DIGITAL SIGNAL PROCESSOR

MN6650A
IC102
TAL SERVO PROCESSOR

MNI87204PMD1
IC401
SYSTEM CONTROL & FL DRIVE

BA4558FTI
IC802 (1/2)

BA4558FTI
IC802 (1/2)

BA4558FTI
IC351 (1/2)

BA4558FTI
IC351 (1/2)

RCDHC-677-E
IC601
REMOTE CONTROL SENSOR

FL601
FL DISPLAY

BA6247N
IC501
MOTOR DRIVE

BAI0393FT2
IC481

TC7SU04FT85R
IC104

X101(16.9344MHz)

X801
(16.9344MHz)

Q851~853

Q451

Q461,462

Q471

Q801,802

Q351

Q352,353

Q401

Q402

M501
(TRAY MOTOR)

M551
(LOADING MOTOR)

SPINDLE MOTOR

D301

D501
(SPEED SENSOR)

D502
(POSITION SENSOR)

D503
(DISC SENSOR)

S551
(UP/DOWN)

S552
(OPEN)

SYNCHRO EDIT

LINE OUT

L ch

R ch

Note:
Audio signal

■ SCHEMATIC DIAGRAM (Parts list on pages 48, 49, 55, 56.)

(This schematic diagram may be modified at any time with development of new technology.)

Note:

- S551 : Up/down det. switch.
- S552 : Open det. switch.
- S601 : Spiral (SPIRAL) switch.
- S602 : One disc random (ONE DISC) switch.
- S603 : Full random (FULL) switch.
- S604 : Repeat (REPEAT) switch.
- S605 : Time mode (TIME MODE) switch.
- S606 : Tape length (TAPE LENGTH) switch.
- S608, 609 : Search (SEARCH) switches. [S608: ◀◀, S609: ▶▶]
- S610~614 : Disc (DISC 1~5) switches. [S610: 1, S611: 2, S612: 3, S613: 4, S614: 5]
- S615 : Program mode (PROGRAM MODE) switch.
- S616, 617 : Skip (SKIP) switches. [S616: |◀◀, S617: ▶▶|]
- S618 : Disc skip (DISC SKIP) switch.
- S619 : Loading drawer open/close (▲ OPEN/CLOSE) switch.
- S620 : Stop (■ STOP) switch.
- S621 : Pause (▮▮ PAUSE) switch.
- S622 : Play (▶ PLAY) switch.
- S624 : Power (POWER) switch in "on" position.
- S701 : Voltage selector in "**240V**" position. (110V ↔ 127V ↔ 220V ↔240V) (For (GC) area.)

- The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.
  Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.

∗ The parenthesized are the values of voltage generated during playing (Test disc 1kHz, L+R, 0dB), others are voltage values in stop mode.

- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
- The supply part number is described alone in the replacement parts.

Part No.	Production Part No.	Supply Part No.
IC11	LM2940T5M	LM2940T5
IC102	MN6650A	MN6650
IC351, 802	BA4558FT1	SVIBA4558F
IC601	RCDHC-677-E	RCDHC-677

- ▬▬▬ / ▬ ▬ ▬ : Positive voltage lines and negative voltage lines.
  ⟿ : audio signal lines.

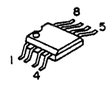
Caution!

IC and LSI are sensitive to static ellectricity.
Secondary trouble can be prevented by taking care during repair.

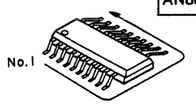
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.

• Terminal guide of IC's, transistors and diodes

BA4558FT1
BA10393FT2

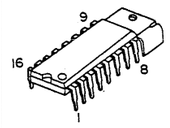


MN6475A-T1	24 Pin
AN8800SCE2	42 Pin

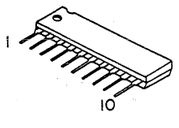


TC7SU04FT85R

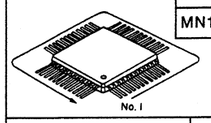
AN8377N



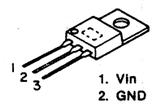
BA6247N



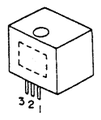
MN6650A	44 Pin
MN6626	64 Pin
MN187204PMD1	64 Pin

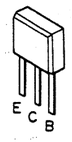


LM2940T5M



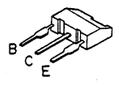
RCDHC-677-E





2SC3311QRSTA
2SA1309QRSTA
2SD1450RSTTA
UN4112TA
UN4212TA
UN4215TA

2SA1547QTV2
2SB1238QSTV6
2SB1240QRTV6
2SD1862QRTV6



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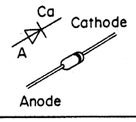
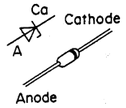
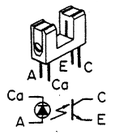
SVD1SR35200V
MA700ATA



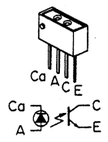


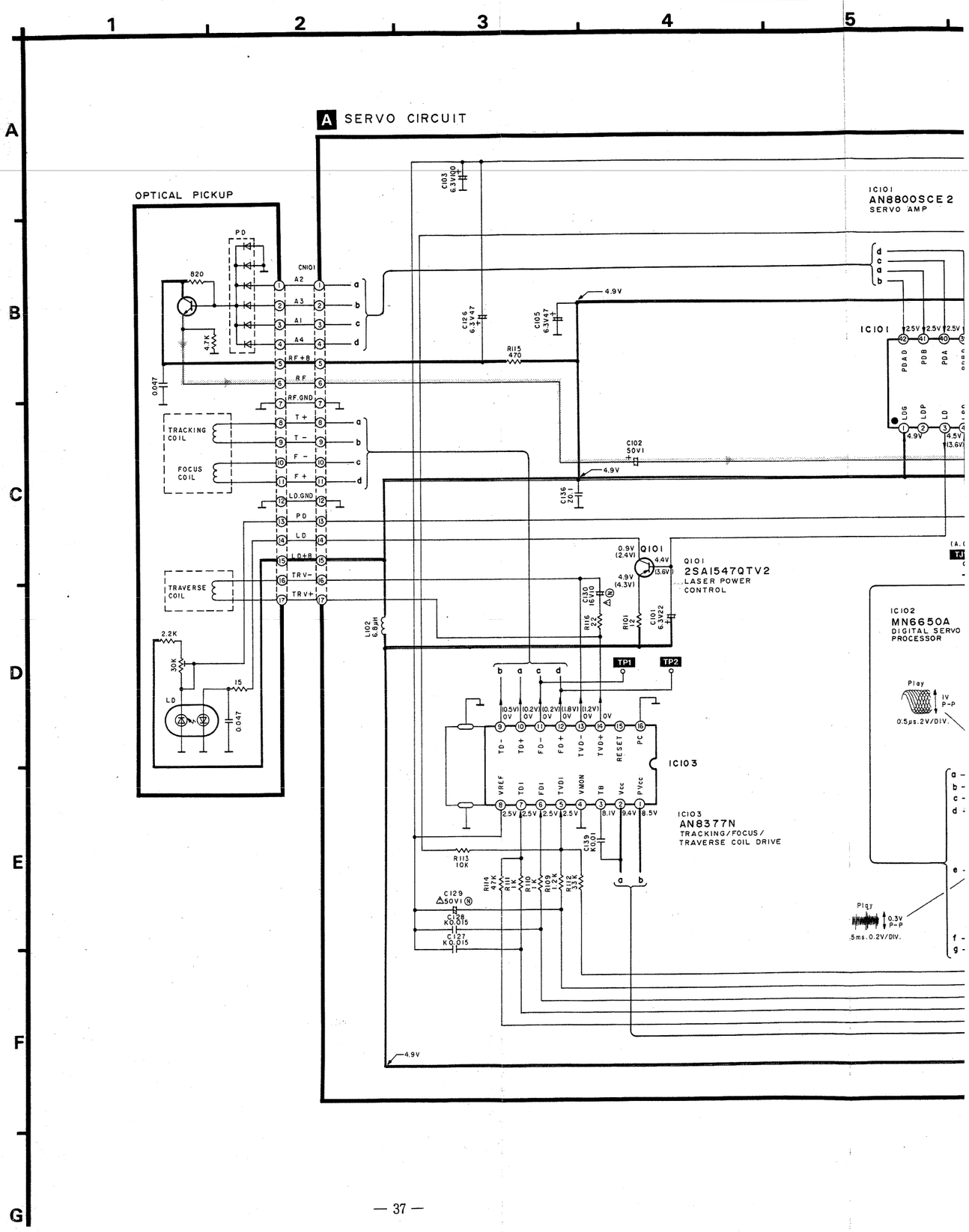
MTZJ4R3BTA
MTZJ6R2BTA
MTZJ8R2CTA
MTZJ9R1CTA
MTZJ10CTA
MTZJ27DTA
MTZJ5R1BTA

RSQGP1S53V



RPR-363A





A SERVO CIRCUIT

OPTICAL PICKUP

PD

CN101

820

4.7K

A2 A3 A1 A4

RF+B RF RF.GND

T+ T− F− F+

LD.GND PD LD LD+B TRV− TRV+

TRACKING COIL

FOCUS COIL

TRAVERSE COIL

2.2K 30K 15 LD 0.047

C103 6.3V100

C126 6.3V47

C105 6.3V47

R115 470

0.047

C102 50V1

C136 Z0.1

4.9V

IC101
AN8800SCE2
SERVO AMP

Play 0.3V P-P 2ms.0.2V/DIV.

Best eye adj.

C110 Δ16V47 (N)

C111 K0.039

C112 K330P

R103 82K

C113 K0.22

C114 K0.22

R116 470

C115 K330P

C134 K220P

RA1 POTENTION METER (5K)

C133 6.3V47

R102 1K

R119 1K

R117 10K

VR101 10K(B)

IC101 pin voltages: PDAO 2.5V, PDB 2.5V, PDA 2.5V, PDBO 2.5V, GND 0V, Vcc 4.9V, FBL1 2.5V, FBL2 2.5V, FE 2.4V, VDET 0V, TBAL 2.4V, TEBAL 2.5V, TE 4.8V, CROSS 2.3V, POT 3V, PBO 2.5V, PTI 2.5V, PTO 0V, TES 0V, WVEL 4.8V, PLAY

Play 0.6V P-P 2ms.0.2/DIV.

IC101 pin voltages: LOG 4.9V, LDP, LD 4.5V (3.6V), LPD 4.9V (2.1V), GND, LDON 0V (4.9V), AMPI 2.4V, AMPO 2.5V, RFIN 2.5V, RF EQ, C.AGC 4V (4.2V), ARF, C.SBDO, RF DET 4.7V (0V), BDO, Vcc 4.9V, SDO 4.7V (0V), VAD+ 3.9V, VREF 2.5V, VAD− 0.9V, OFTR 4.7V (0V)

C117 6.3V47
C119 Z0.1
C116 6.3V47
C118 Z0.1
C142 K270P

TJ101 (RF)

Play 0.5V P-P 0.5μs. 0.1V/DIV.

(A.GND) TJ102

Q101 0.9V (2.4V) 4.4V (3.6V)

Q101
2SAI547QTV2
LASER POWER CONTROL

4.9V (4.3V)

C130 150P (N)

R116 12

R101 12

C101 6.3V22

L102 6.8μH

TP1 TP2

IC103
AN8377N
TRACKING/FOCUS/
TRAVERSE COIL DRIVE

IC103 pin voltages: TD− (0.5V) 0V, TD+ (0.2V) 0V, FD− (0.2V) 0V, FD+ (0.2V) 0V, TVD− (1.8V) 0V, TVD+ (1.2V) 0V, RESET 0V, PC; VREF 2.5V, TDI 2.5V, FDI 2.5V, TVDI 2.5V, VMON, TB 8.1V, Vcc 9.4V, PVcc 8.5V

C139 K0.01

R113 10K

C129 Δ50V1 (N)

C128 K0.015

C127 K0.015

R114 47K

R111 1K

R110 2K

R109 2K

R112 1K

IC102
MN6650A
DIGITAL SERVO PROCESSOR

IC102 pin voltages: TRCRS 4.8V, TBAL 2.4V, VDET 0V, T6, T5, T4, T3, T2, T1, T0, XI 2.3V; TES 0V, PLAY 4.8V, /RFDET (0V) 4.7V, DO 0V, OFT (0V) 4.7V, ARF 2.2V, WVEL 0V, PBO 2.5V, TE 2.5V, FE 2.4V, VR2 0.9V; VR1 3.9V, LDON (4.9V)OP, Vss, AVss 4.9V, AVdd 4.9V, Vdd 2.5V, TRV 2.5V, TVD 2.5V, FOD 2.5V, TRD 2.5V, KICK 2.5V; /RST 4.6V, /TLOCK 4.9V(0V), /FLOCK 4.9V(0V), SENSE 4.7V, MLD 4.6V, MCLK 4.7V(0V), MDATA 4.9V(0V), /TRON 0V(4.9V), CLVS, Vss 4.9V, /TEST

Play 1V P-P 0.5μs.2V/DIV.

Play 0.3V P-P .5ms.0.2V/DIV.

Play 0.5V P-P 5ms.0.2V/DIV

Play 5V 0V T=13.2ms.

Play 5V 0V T=13.2ms.

Play 5V 2.8V T=23ms.

Play 0.3V P-P 5ms.0.1V/DIV

IC104
TC7SU04FT85R
BUFFER AMP (OSC)

IC104 pin voltages: 4.9V, 2.3V, 2.3V

R121 5.6K

X101 (16.9344MHz)

C141 K27P

C140 K27P

C122 K0.01

C121 Z1

C138 K0.22

6V P-P F=16.9344MHz

R118 1K

R105 100K

C120 K1200P

R120 1K

R106 22K

R107 15K

R108 22K

C135 25V33

C125 16V47

C124 6.3V100

9.4V 8.5V 4.9V

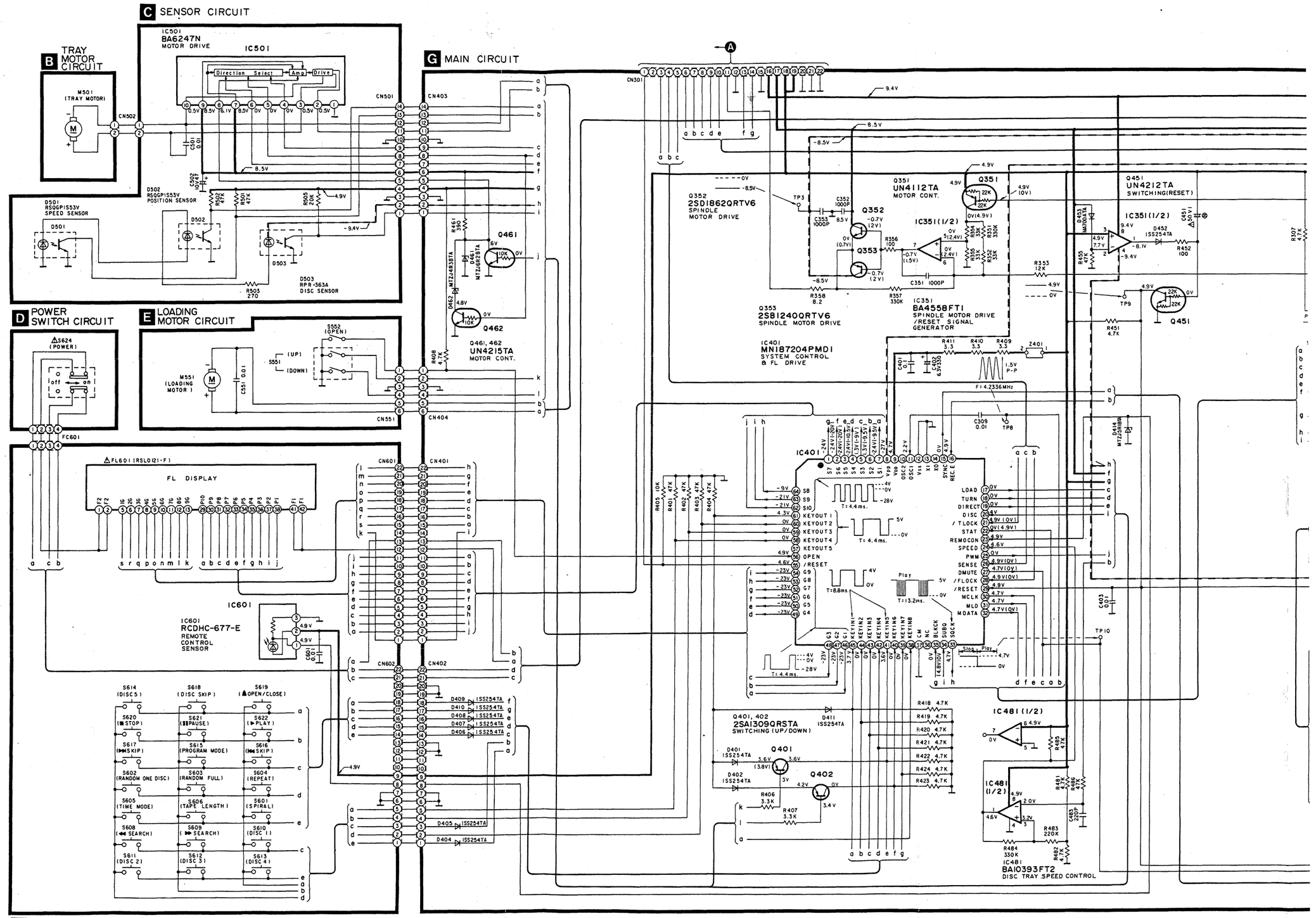
L101

C123 Z0.1

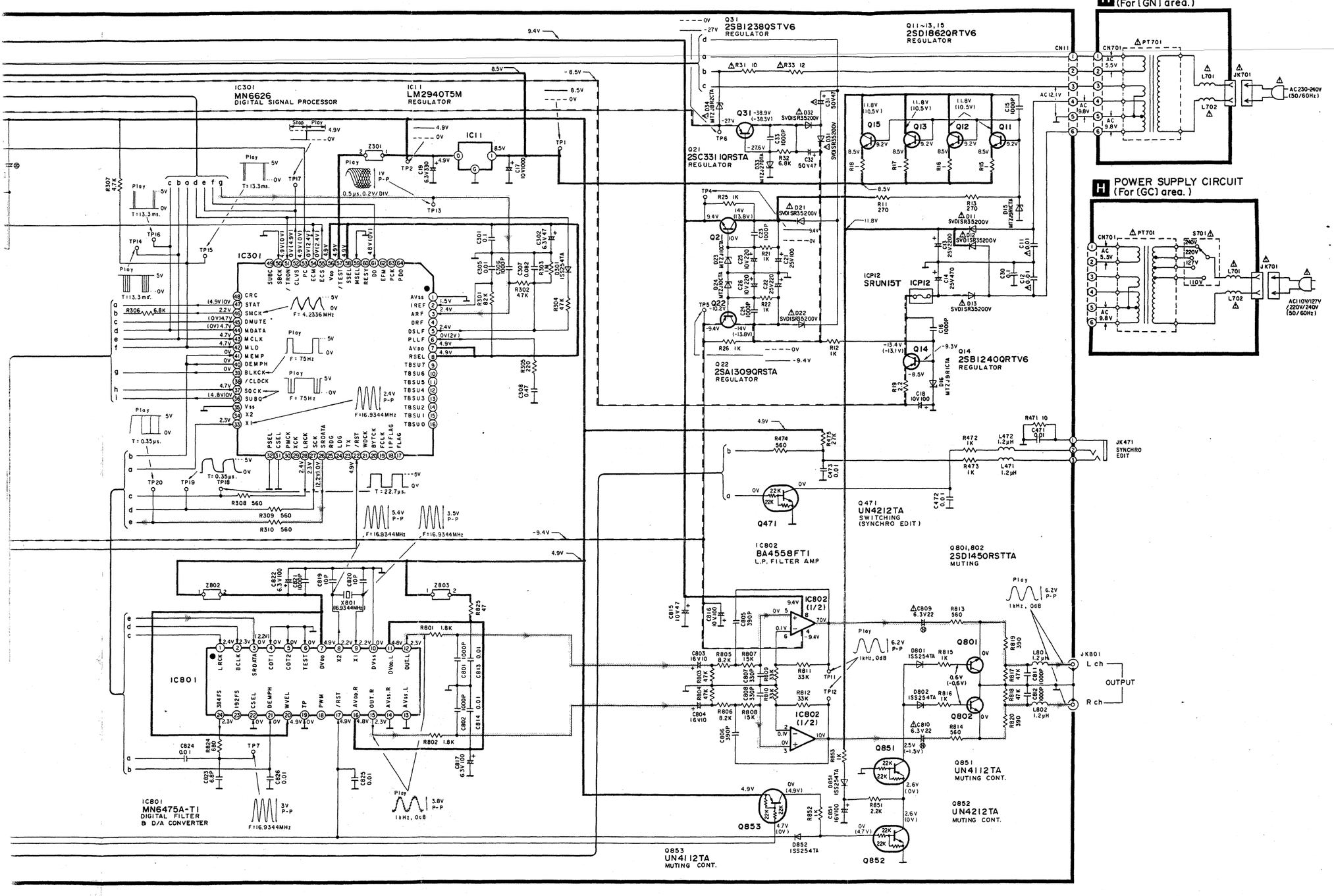
SPINDLE MOTOR

CN102

A

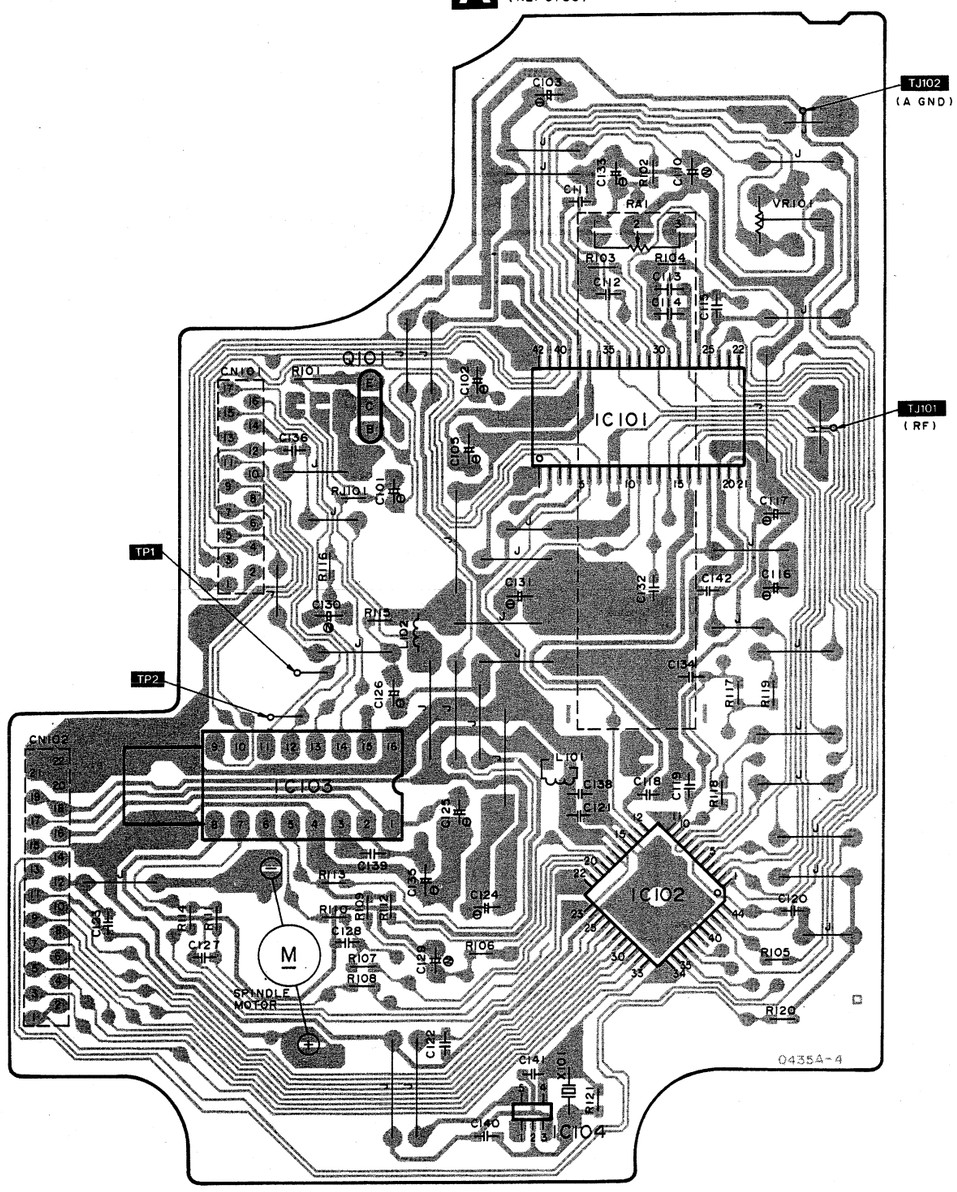

C SENSOR CIRCUIT
B TRAY MOTOR CIRCUIT
M501 (TRAY MOTOR)
CN502
C501 0.01
IC501 BA6247N MOTOR DRIVE
Direction
Select
Amp
Drive
CN501
C502 10/47
D501 RSOGP1553V SPEED SENSOR
D502 RSOGP1553V POSITION SENSOR
D503 RPR-3634 DISC SENSOR
R502 47K
R501 47K
R505 20K
R503 270
D461 MTZJ4R3BTA
D462 MTZJ6R2BTA
Q461
Q462
Q461, 462 UN4215TA MOTOR CONT.
R408 4.7K
D SWITCH CIRCUIT
S624 (POWER)
off
on
FC601
E LOADING MOTOR CIRCUIT
M551 (LOADING MOTOR)
C551 0.01
S552 (OPEN)
S551 (UP) (DOWN)
CN551
CN404
G MAIN CIRCUIT
CN403
FL DISPLAY
FL601 (RSL0121-F)
IC601 RCDHC-677-E REMOTE CONTROL SENSOR
C601 0.01
CN601
CN401
CN602
CN402
S614 (DISC 5)
S618 (DISC SKIP)
S619 (▲OPEN/CLOSE)
S620 (■STOP)
S621 (❚❚PAUSE)
S622 (▶PLAY)
S617 (▶▶SKIP)
S615 (PROGRAM MODE)
S616 (◀◀SKIP)
S602 (RANDOM ONE DISC)
S603 (RANDOM FULL)
S604 (REPEAT)
S605 (TIME MODE)
S606 (TAPE LENGTH)
S601 (SPIRAL)
S608 (◀◀ SEARCH)
S609 (▶▶ SEARCH)
S610 (DISC 1)
S611 (DISC 2)
S612 (DISC 3)
S613 (DISC 4)
D409 ISS254TA
D410 ISS254TA
D408 ISS254TA
D407 ISS254TA
D406 ISS254TA
D405 ISS254TA
D404 ISS254TA
CN301
Q352 2SD1862QRTV6 SPINDLE MOTOR DRIVE
Q351 UN4112TA MOTOR CONT.
IC351(1/2)
Q353 2SB1240QRTV6 SPINDLE MOTOR DRIVE
IC351 BA4558FTI SPINDLE MOTOR DRIVE /RESET SIGNAL GENERATOR
Q451 UN4212TA SWITCHING(RESET)
IC401 MN187204PMD1 SYSTEM CONTROL & FL DRIVE
F=4.2336MHz
Q401, 402 2SA1309QRSTA SWITCHING (UP/DOWN)
Q401
Q402
IC481 (1/2)
IC481 BA10393FT2 DISC TRAY SPEED CONTROL
TP3
TP8
TP9
TP10
LOAD
TURN
DIRECT
DISC
/TLOCK
STAT
REMOCON
SPEED
PWM
SENSE
DMUTE
/FLOCK
/RESET
MCLK
MLD
MDATA
KEYOUT1
KEYOUT2
KEYOUT3
KEYOUT4
KEYOUT5
OPEN /RESET
KEYIN1
KEYIN2
KEYIN3
KEYIN4
KEYIN5
KEYIN6
KEYIN7
KEYIN8
SUBQ
SQCK
SENS
SBLK
Play
Stop
F OPERATION CIRCUIT

20 21 22 23 24 25 26 27 28 29

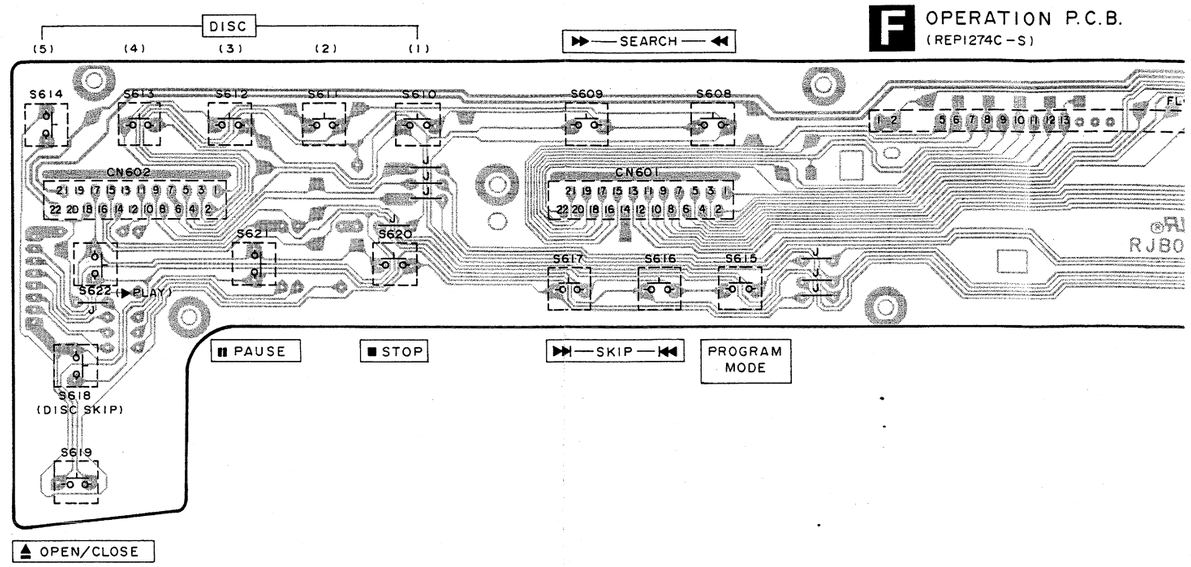

H POWER SUPPLY CIRCUIT (For [GN] area.)
H POWER SUPPLY CIRCUIT (For [GC] area.)
IC301 MN6626 DIGITAL SIGNAL PROCESSOR
IC11 LM2940T5M REGULATOR
Q31 2SB1238QSTV6 REGULATOR
Q11~13, 15 2SD1862QRTV6 REGULATOR
Q21 2SC3311QRSTA REGULATOR
Q22 2SA1309QRSTA REGULATOR
Q14 2SB1240QRTV6 REGULATOR
ICP12 SRUN15T
IC801 MN6475A-TI DIGITAL FILTER & D/A CONVERTER
IC802 BA4558FTI L.P. FILTER AMP
Q801,802 2SD1450RSTTA MUTING
Q471 UN4212TA SWITCHING (SYNCHRO EDIT)
Q851 UN4112TA MUTING CONT.
Q852 UN4212TA MUTING CONT.
Q853 UN4112TA MUTING CONT.
JK701
JK471 SYNCHRO EDIT
JK801 L ch R ch OUTPUT
AC 230-240V (50/60Hz)
AC 110V/127V/220V/240V (50/60Hz)

■ PRINTED CIRCUIT BOARDS

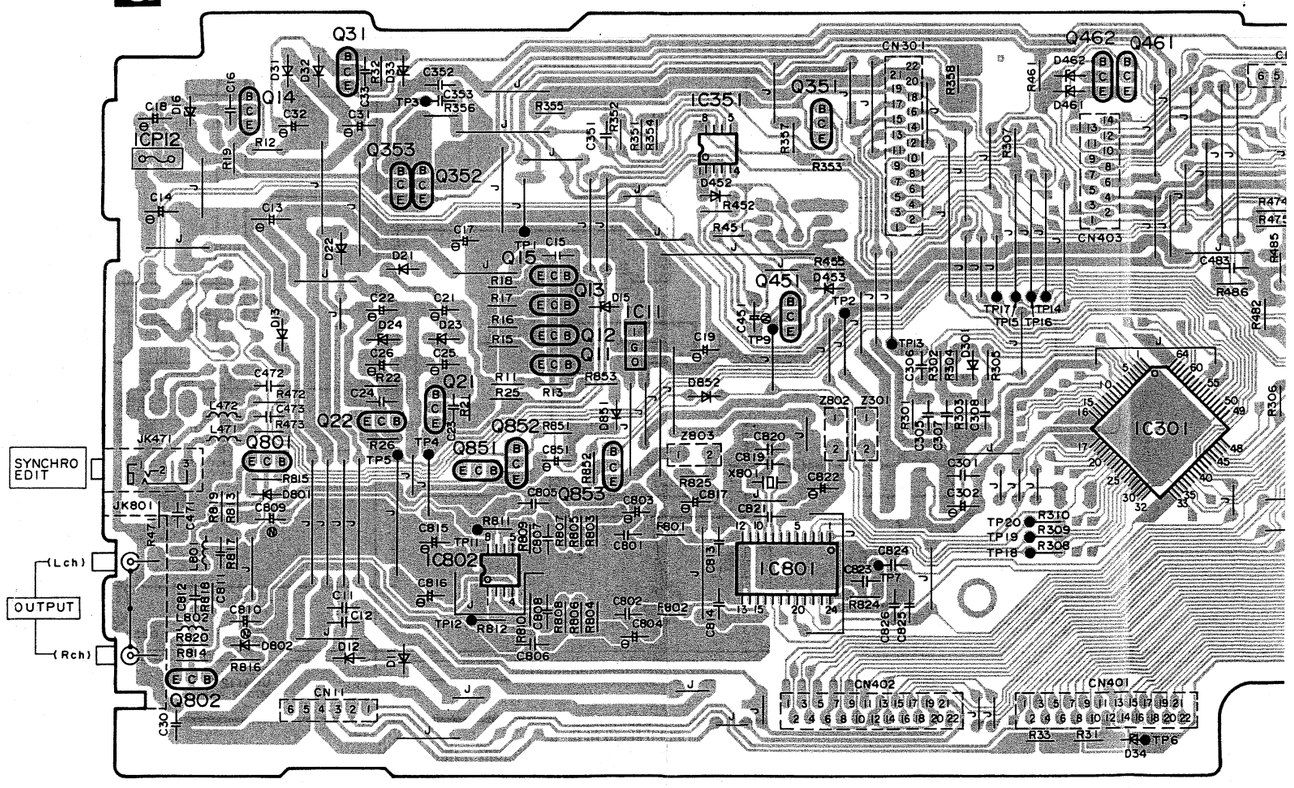
A SERVO P.C.B.
(REP0766)



F OPERATION P.C.B.
(REP1274C-S)

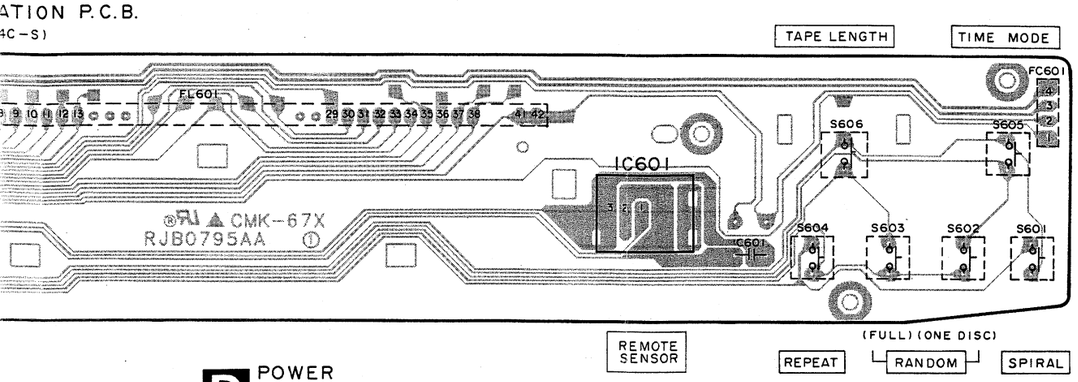


G MAIN P.C.B.
(REP1273C-M)

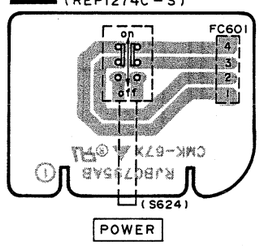


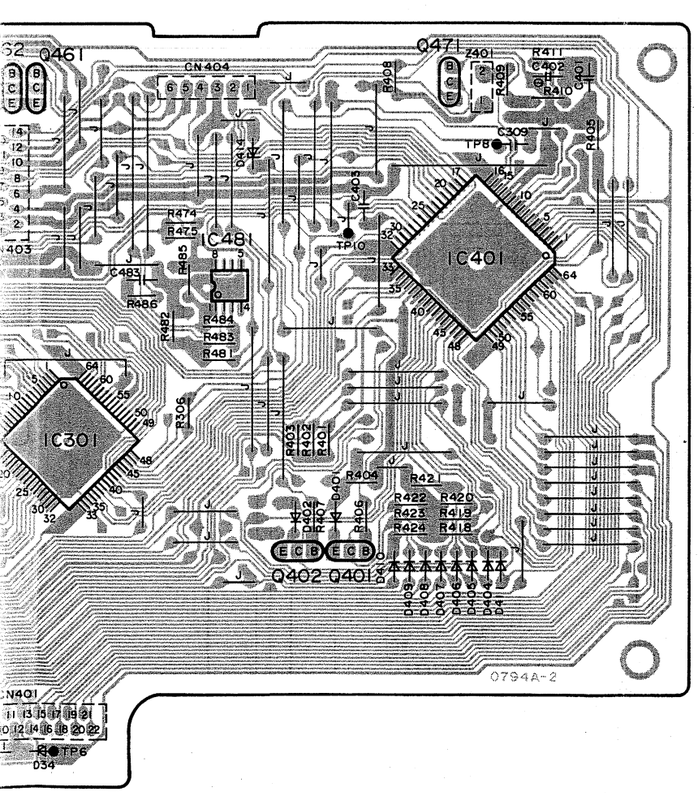
10 11 12 13 14 15 16 17 18 19

ATION P.C.B.
4C-S)

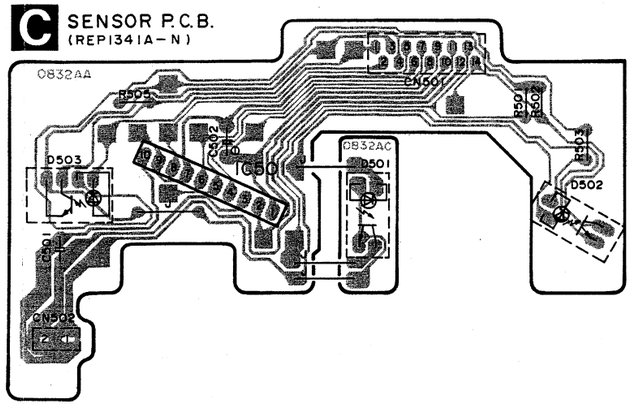


D POWER SWITCH P.C.B.
(REPI274C-S)

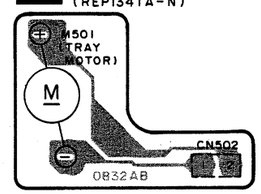




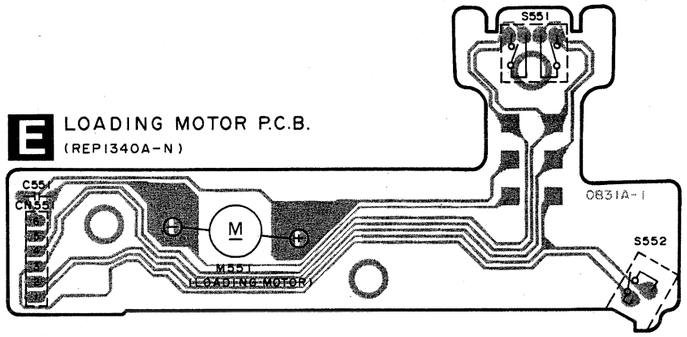
C SENSOR P.C.B.
(REPI341A-N)



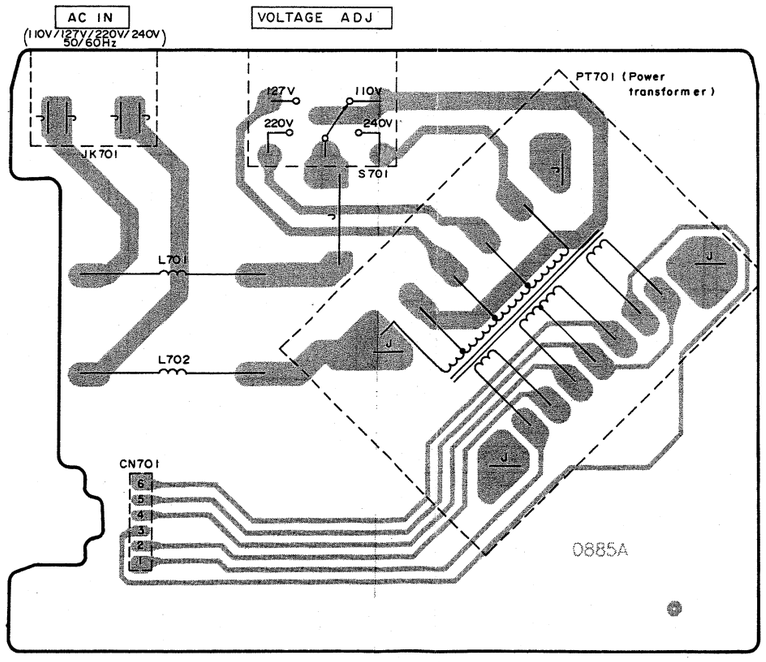
B TRAY MOTOR P.C.B.
(REPI341A-N)



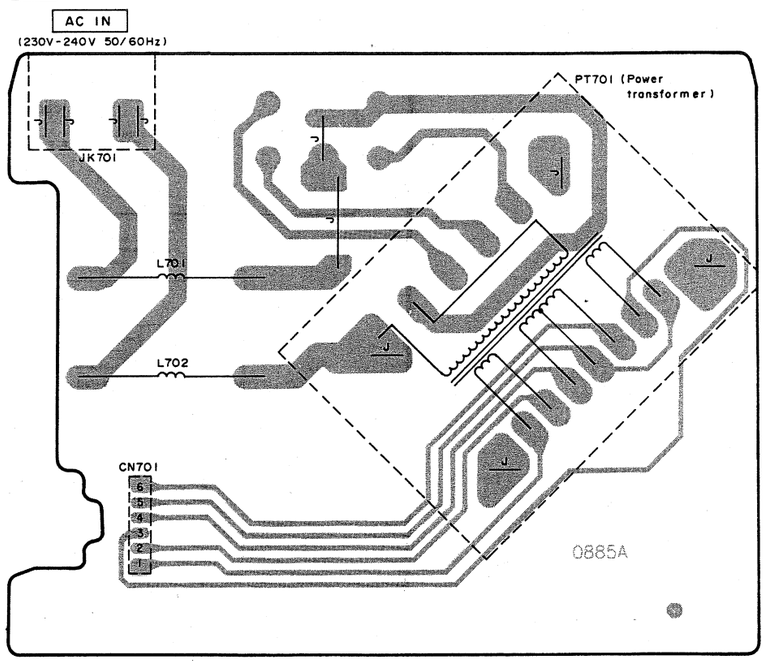
E LOADING MOTOR P.C.B.
(REPI340A-N)



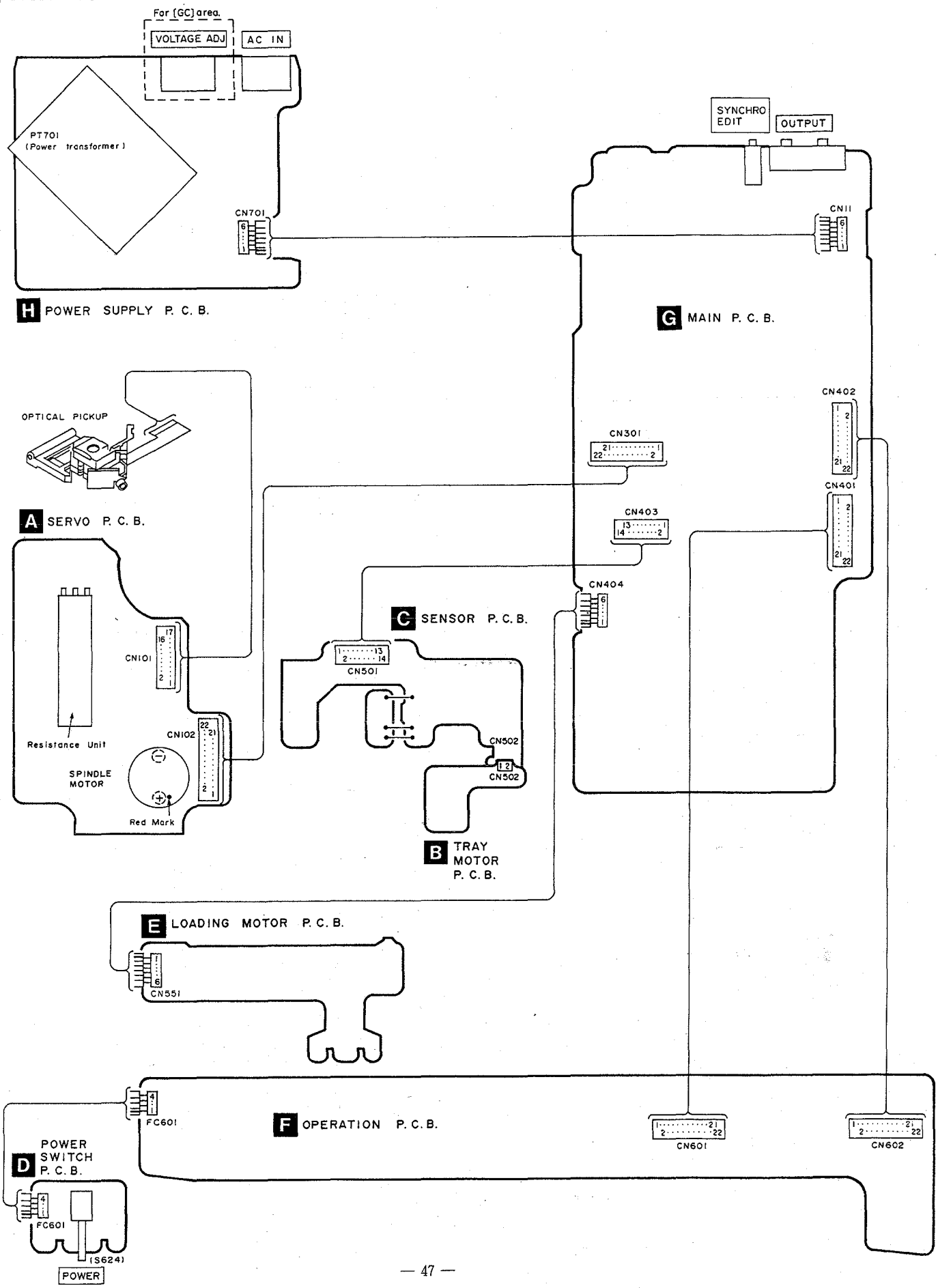
H POWER SUPPLY P.C.B. For [GC] area.
(REPI395B-P)



H POWER SUPPLY P.C.B. For [GN] area.
(REPI395C-P)



■ WIRING CONNECTION DIAGRAM



■ REPLACEMENT PARTS LIST

Notes: *Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.
*Remote Control Ass'y:
Supply period for three years from termination of production.
*Warning: This product uses a laser diode. Refer to caution statements on page 3.
*ACHTUNG: Die lasereinheit nicht zerlegen.
Die lasereinheit darf nur gegen einc vom hersteller spezifizierte einheit ausgetauscht werden.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC11	LM2940T5	IC, REGULATOR	
IC101	AN8800SCE2	IC, SERVO AMP	
IC102	MN6650	IC, DIGITAL SERVO PROCESSOR	
IC103	AN8377N	IC, COIL DRIVE	
IC104	TC7SU04FT85R	IC, BUFFER AMP	
IC301	MN6626	IC, DIGITAL SIGNAL PROCESSOR	
IC351	SVIBA4558F	IC, SPINDLE MOTOR CONTROL	
IC401	MN187204PMD1	IC, SYSTEM CONTROL&FL DRIVE	
IC481	BA10393FT2	IC, DISC TRAY SPEED CONTROL	
IC501	BA6247N	IC, MOTOR DRIVE	
IC601	RCDHC-677	IC, REMOTE CONTROL SENSOR	
IC801	MN6475A-T1	IC, DIGITAL FILTER&D/A CONV.	
IC802	SVIBA4558F	IC, L. P. F	
		TRANSISTOR(S)	
Q11-13	2SD1862QRTV6	TRANSISTOR	
Q14	2SB1240-P	TRANSISTOR	
Q15	2SD1862QRTV6	TRANSISTOR	
Q21	2SC3311A-Q	TRANSISTOR	
Q22	2SA1309A-R	TRANSISTOR	
Q31	2SB1238QSTV6	TRANSISTOR	
Q101	2SA1547QTV2	TRANSISTOR	
Q351	UN4112	TRANSISTOR	
Q352	2SD1862QRTV6	TRANSISTOR	
Q353	2SB1240-P	TRANSISTOR	
Q401, 402	2SA1309A-R	TRANSISTOR	
Q451	UN4212TA	TRANSISTOR	
Q461, 462	UN4215	TRANSISTOR	
Q471	UN4212TA	TRANSISTOR	
Q801, 802	2SD1450RTA	TRANSISTOR	
Q851	UN4112	TRANSISTOR	
Q852	UN4212TA	TRANSISTOR	
Q853	UN4112	TRANSISTOR	
		DIODE(S)	
D11-13	SVD1SR35200A	DIODE	⚠
D15, 16	MTZJ9R1CTA	DIODE	
D21, 22	SVD1SR35200A	DIODE	⚠
D23, 24	MTZJ10CTA	DIODE	
D31, 32	SVD1SR35200A	DIODE	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
D33	MTZJ27DTA	DIODE	
D34	MTZJ8R2CTA	DIODE	⚠
D301	1SS254TA	DIODE	
D401, 402	1SS254TA	DIODE	
D404-411	1SS254TA	DIODE	
D414	MTZJ5R1BTA	DIODE	
D452	1SS254TA	DIODE	
D453	MA700	DIODE	
D461	MTZJ6R2BTA	DIODE	
D462	MTZJ4R3BTA	DIODE	
D501, 502	RSQGP1S53V	DIODE	
D503	RPR-363A	DIODE	
D801, 802	1SS254TA	DIODE	
D851, 852	1SS254TA	DIODE	
		I. C. PROTECTOR(S)	
ICP12	SRUN15	I. C. PROTECTOR	
		VARIABLE RESISTOR(S)	
VR101	EVND3AA00B14	V. R, BEST EYE ADJUSTMENT	
		COIL(S)	
L101	RLB0003	COIL	
L471, 472	ELEXT1R2KA9	COIL	
L701, 702	SLQX400-D	COIL	⚠
L801, 802	ELEXT1R2KA9	COIL	
		COMPONENT COMBINATION(S)	
Z301	BL02RN2R62T4	COMBINATION PART	
Z401	BL02RN2R62T4	COMBINATION PART	
Z802, 803	BL02RN2R62T4	COMBINATION PART	
		OSCILLATOR(S)	
X101	RSXZ16M9M01T	OSCILLATOR(16. 9344MHz)	
X801	RSXZ16M9M01T	OSCILLATOR(16. 9344MHz)	
		FL DISPLAY	
FL601	RSL0121-F	FL DISPLAY	⚠

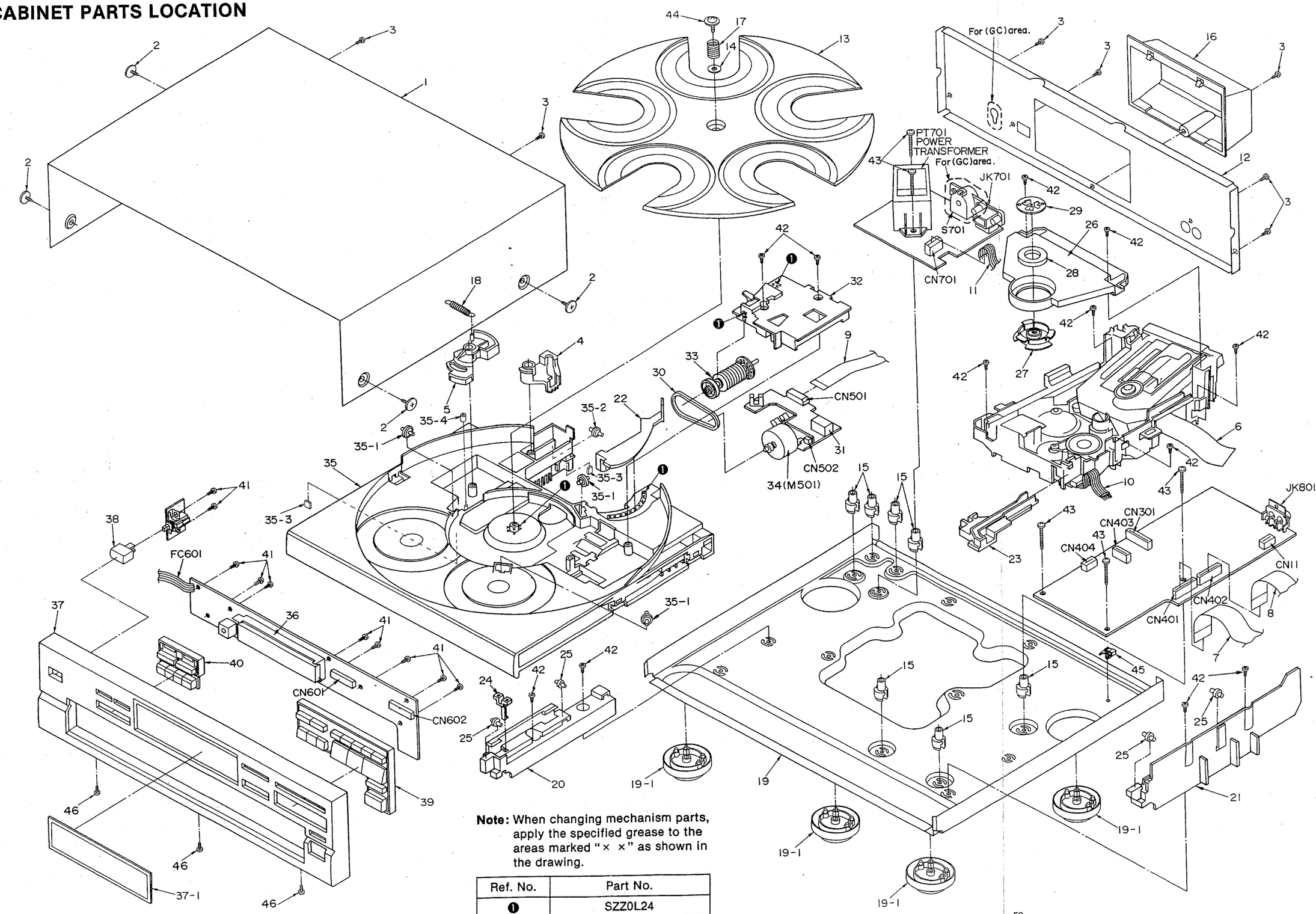
Ref. No.	Part No.	Part Name & Description	Remarks
		SWITCH(ES)	
S551	RSH2A001-2	SW, UP/DOWN DETECTOR	
S552	RSH1A017-U	SW, OPEN DETECTOR	
S601	EVQ21405R	SW, SPIRAL	
S602	EVQ21405R	SW, ONE DISC (RANDOM)	
S603	EVQ21405R	SW, FULL (RANDOM)	
S604	EVQ21405R	SW, REPEAT	
S605	EVQ21405R	SW, TIME MODE	
S606	EVQ21405R	SW, TAPE LENGTH	
S608	EVQ21405R	SW, R. SEARCH	
S609	EVQ21405R	SW, F. SEARCH	
S610	EVQ21405R	SW, DISC 1	
S611	EVQ21405R	SW, DISC 2	
S612	EVQ21405R	SW, DISC 3	
S613	EVQ21405R	SW, DISC 4	
S614	EVQ21405R	SW, DISC 5	
S615	EVQ21405R	SW, PROGRAM MODE	
S616	EVQ21405R	SW, R. SKIP	
S617	EVQ21405R	SW, F. SKIP	
S618	EVQ21405R	SW, DISC SKIP	
S619	EVQ21405R	SW, OPEN/CLOSE	
S620	EVQ21405R	SW, STOP	
S621	EVQ21405R	SW, PAUSE	
S622	EVQ21405R	SW, PLAY	
S624	SSH1230	SW, POWER	⚠
S701	SSR187-1	SW, VOLTAGE SELECTOR	(GC) ⚠
		CONNECTOR(S) & SOCKET(S)	
CN11	RJS1A6606	CONNECTOR(6P)	
CN101	SJSD1727-1	CONNECTOR(17P)	
CN102	SJSD2227-1	CONNECTOR(22P)	
CN301	RJS1A6822	CONNECTOR(22P)	
CN401, 402	RJS1A6822	CONNECTOR(22P)	
CN403	RJS1A6814	CONNECTOR(14P)	
CN404	RJS1A6606	CONNECTOR(6P)	
CN501	RJS1A6714	CONNECTOR(14P)	
CN502	RJR0094	SOCKET(2P)	
CN551	SJT30644-H	CONNECTOR(6P)	
CN601, 602	RJS1A6222	CONNECTOR(22P)	
CN701	SJT30643-V	CONNECTOR(6P)	
		FLAT CABLE(S)	
FC601	REZ0455-1	FLAT CABLE(4P)	
		TRANSFORMER(S)	
PT701	RTP1K4E020	POWER TRANSFORMER	(GC) ⚠
PT701	RTP1K4B012	POWER TRANSFORMER	(GN) ⚠

Ref. No.	Part No.	Part Name & Description	Remarks
		JACK(S)	
JK471	RJJ33T01	SYNCHRO EDIT	
JK701	SJS9236	AC INLET	(GC) ⚠
JK701	SJSD16	AC INLET	(GN) ⚠
JK801	RJH3201N	LINE OUT	
		MAGNET RESISTOR ELEMENT(S)	
RA1	EWS7M0A00Q53	RESISTANCE UNIT	

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RKM0193-K	CABINET	
2	SNE2129-3	SCREW	
3	XTBS3+8JFZ1	SCREW	
4	RDG0198	OPEN LOCK GEAR	
5	RDG0199	CLOSE LOCK GEAR	
6	REZ0397-3	FPC BOARD(22P)	
7	REZ0474	FPC BOARD(22P)	
8	REZ0475	FPC BOARD(22P)	
9	REZ0476	FPC BOARD(14P)	
10	REZ0477	FLAT CABLE(6P)	
11	REZ0478	FLAT CABLE(6P)	
12	RFKHLPD827GC	REAR PANEL ASS'Y	(GC)
12	RFKHLPD827GN	REAR PANEL ASS'Y	(GN)
13	RGT0007	ROTARY TRAY	
14	RHW81001-1	WASHER	
15	RKQ0089	P.C.B. SUPPORT	
16	RKQ0104	REAR COVER	
17	RMB0255	SPRING(DISC TRAY)	
18	RME0111-1	SPRING(LOCK GEAR)	
19	RFKJLPD627PK	CHASSIS ASS'Y	
19-1	RKA0053-A	FOOT	
20	RMR0540-K	TRAY BASE GUIDE(L)	
21	RMR0593-K	TRAY BASE GUIDE(R)	
22	RMR0549-W	DISC GUARD	
23	RMR0551-W	GUARD CAM	
24	RMR0575-W	SLIDER(B)	
25	RMR0577-W	ROLLER	
26	RFKNLPD827GC	CLAMP PLATE ASS'Y	
27	SIRD51-1	CLAMPER	
28	SOMD4	MAGNET	
29	SOYD2	YOKE	
30	RDV0024	BELT	
31	RMN0174	SENSOR HOLDER	
32	RMR0547-K	WORM BASE	
33	RXG0026	WORM ASS'Y	
34	REM0026	TRAY MOTOR ASS'Y(M501)	
35	RXQ0227-2	TRAY ASS'Y	
35-1	RMR0546-K	TRAY ROLLER	
35-2	RMR0564-W2	ROLLER(A)	
35-3	RMG0269-H	CUSHION RUBBER	
35-4	RMG0200	RUBBER	
36	RMN0172	FL HOLDER	
37	RFKGLPD827GC	FRONT PANEL ASS'Y	
37-1	RGK0470A	FRONT ORNAMENT PLATE	
38	RGU0030	POWER BUTTON	
39	RGU0726	MAIN BUTTON	
40	RGU0727	SUB BUTTON	
41	XTB26+8J	SCREW	
42	XTB3+10JFZ	SCREW	

Ref. No.	Part No.	Part Name & Description	Remarks
43	XTB3+20J	SCREW	
44	XTWS3+10T	SCREW	
45	SHRD162	CORD HOLDER	
46	XTB3+8JFZ	SCREW	
		PACKING MATERIAL	
P1	RPG1182	PACKING CASE	
P2	RPN0597	CUSHION	
P3	XZB60X65A01Z	PROTECTION BAG(UNIT)	
P4	XZB24X34C04	PROTECTION BAG(ACCESSORY)	
P5	XZB22X20C03	PROTECTION BAG(CORD)	
P6	RPQ0164	PAD	
		ACCESSORIES	
A1	RQT1461-G	INSTRUCTION MANUAL	
A2	RQX7433ZA	WARRANTY CARD	(GN)
A3	RQCB0169	SERVICENTER LIST	
A4	RJA0004	AC POWER SUPPLY CORD	(GC)⚠
A4	SJA173	AC POWER SUPPLY CORD	(GN)⚠
A5	SJP2249-3	STEREO CONNECTION CABLE	
A6	SJP9215	POWER PLUG ADAPTOR	(GC)⚠
A7	RAK-SL308E	REMOTE CONTROL TRANSMITTER	
A7-1	RKK0020-K	BATTERY COVER	
A8	RQLA0134	VOLT. CAUTION LABEL	(GC)

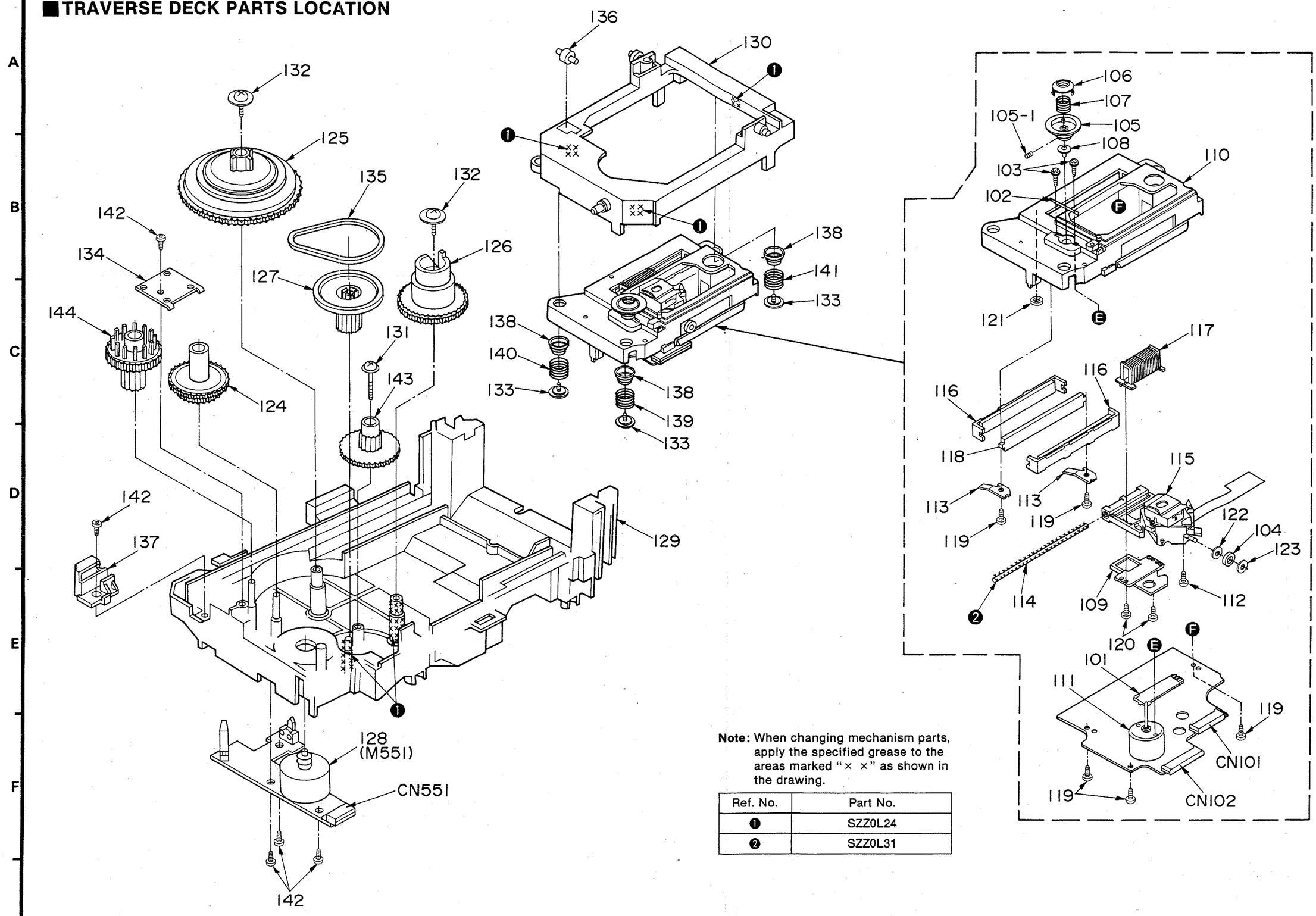
■ CABINET PARTS LOCATION



Note: When changing mechanism parts, apply the specified grease to the areas marked "× ×" as shown in the drawing.

Ref. No.	Part No.
❶	SZZ0L24

■TRAVERSE DECK PARTS LOCATION



Note: When changing mechanism parts, apply the specified grease to the areas marked "× ×" as shown in the drawing.

Ref. No.	Part No.
❶	SZZ0L24
❷	SZZ0L31

■ REPLACEMENT PARTS LIST

Notes: *Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.
*Warning: This product uses a laser diode. Refer to caution statements on page 3.
*ACHTUNG: Die lasereinheit nicht zerlegen.
Die lasereinheit darf nur gegen einc vom hersteller spezifizierte einheit ausgetauscht werden.

Ref. No.	Part No.	Part Name & Description	Remarks
		TRAVERSE DECK	
101	SJED10	POTENTIOMETER HOLDER	
102	RMEO115	SIDE PRESSURE SPRING	
103	RMQO299	SCREW	
104	RMRO463	ROLLER	
105	SDOD28-2E	TURNTABLE ASS'Y	
105-1	XXE26D5	SCREW	
106	SDOD29-2	TURNTABLE RING	
107	SRQA010N04	TURNTABLE SPRING	
108	RXQO232	SIDE PRESSURE PULLEY	
109	SHRD176-E	BRUSH HOLDER	
110	SISD22-7	TRAVERSE BASE	
111	SJGDRF310T-2	SPINDLE MOTOR	
112	SNSD31	SCREW	
113	SUWD112-2	SHAFT HOLDER	
114	SUXD123-1	GUIDE SHAFT	
115	SOAD70A	OPTICAL PICKUP	
116	RFKNLPC363P	YOKE(A) ASS'Y	
117	SORD46-E	COIL ASS'Y	
118	SOYD22-1	YOKE(B)	
119	XTB3+10G	SCREW	
120	SNSD39	SCREW	

Ref. No.	Part No.	Part Name & Description	Remarks
121	SHGD148	STOPPER RUBBER	
122	SHWD33	WASHER	
123	SHWD34	WASHER	
124	RDGO196-1	DRIVE GEAR(B)	
125	RDKD017	DRIVE CAM	
126	RDKD018	ELEVATION CAM	
127	RDPO050	PULLEY GEAR	
128	RXQO252	LOADING MOTOR ASS'Y(M551)	
129	RXQO250	MECHANISM BASE ASS'Y	
130	RXQO251	SUB BASE ASS'Y	
131	RHD30029	SCREW	
132	RHD30030	SCREW	
133	RHD30031	SCREW	
134	RMAO581	REINFORCING PLATE	
135	RMGO268-K	BELT	
136	RMRO564-W2	ROLLER(A)	
137	RMRO565-W1	SLIDER	
138	SHGD153-1	FLOATING RUBBER	
139	SUSD136-3	FLOATING SPRING(A)	
140	SUSD137-1	FLOATING SPRING(B)	
141	SUSD145-1	FLOATING SPRING(C)	
142	XTB3+10JFZ	SCREW	
143	RDGO194	REDUCTION GEAR	
144	RDGO195	DRIVE GEAR(A)	

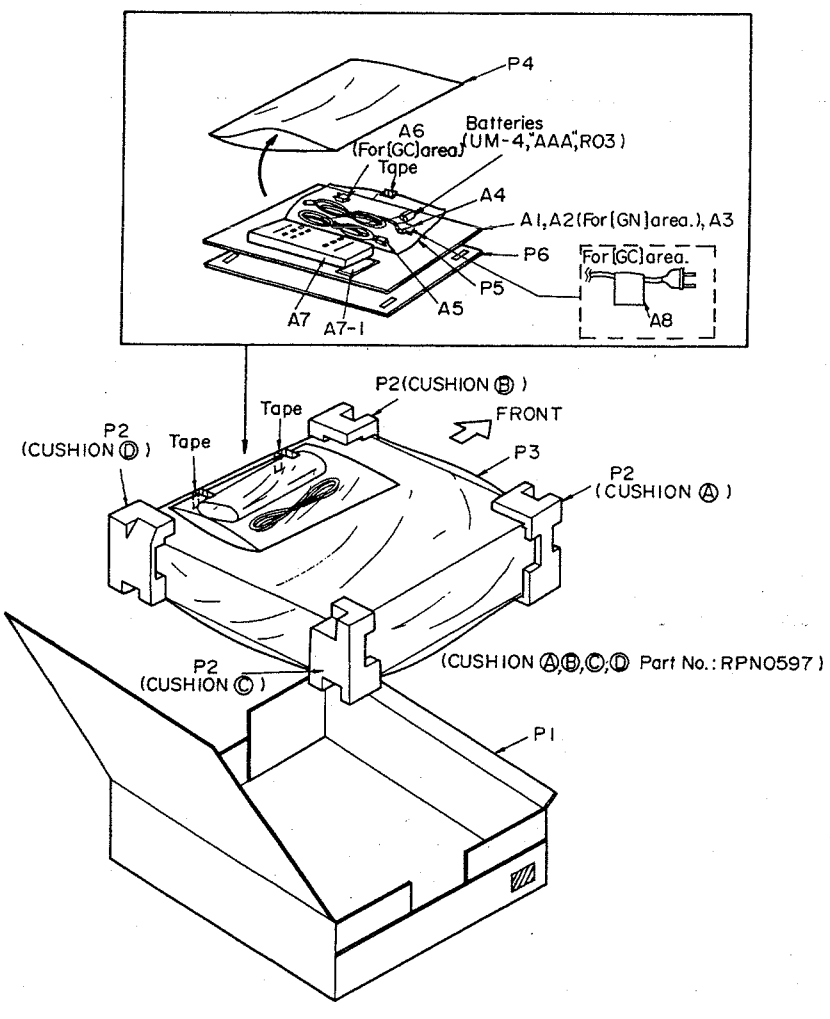
■ RESISTORS & CAPACITORS

Notes : * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R11	ERDS2TJ271	1/4W 270
R12	ERDS2TJ102	1/4W 1K
R13	ERDS2TJ271	1/4W 270
R15-18	ERDS2TJ1R0	1/4W 1.0
R19	ERDS2TJ2R2T	1/4W 2.2
R21, 22	ERDS2TJ102	1/4W 1K
R23, 24	ERQ16NKWR15E	1W 0.15
R25, 26	ERDS2TJ102	1/4W 1K
R31	ERDS2TJ100	1/4W 10 ⚠
R32	ERDS2TJ682T	1/4W 6.8K
R33	ERDS2TJ120T	1/4W 12 ⚠
R101	ERJ6GEYJ120V	1/10W 12
R102	ERJ6GEYJ122V	1/10W 1.2K
R103	ERJ6GEYJ823	1/10W 82K
R104	ERJ6GEYJ471V	1/10W 470
R105	ERJ6GEYJ104V	1/10W 100K
R106	ERJ6GEYJ223V	1/10W 22K
R107	ERJ6GEYJ153V	1/10W 15K
R108	ERJ6GEYJ223V	1/10W 22K
R109	ERJ6GEYJ122V	1/10W 1.2K
R110, 111	ERJ6GEYJ102V	1/10W 1K
R112	ERJ6GEYJ333V	1/10W 33K
R113	ERJ6GEYJ103V	1/10W 10K
R114	ERJ6GEYJ473V	1/10W 47K
R115	ERJ6GEYJ471V	1/10W 470
R116	ERJ6GEYJ220	1/10W 22
R117	ERJ6GEYJ103V	1/10W 10K
R118-120	ERJ6GEYJ102V	1/10W 1K
R121	ERJ6GEYJ562V	1/10W 5.6K
R301	ERDS2TJ823T	1/4W 82K
R302	ERDS2TJ473	1/4W 47K
R303	ERDS2TJ105T	1/4W 1M
R304	ERDS2TJ473	1/4W 47K
R305	ERDS2TJ221	1/4W 220
R306	ERDS2TJ682T	1/4W 6.8K
R307	ERDS2TJ472	1/4W 4.7K
R308-310	ERDS2TJ561	1/4W 560
R351	ERDS2TJ334	1/4W 330K
R352	ERDS2TJ333	1/4W 33K
R353	ERDS2TJ123	1/4W 12K
R354, 355	ERDS2TJ333	1/4W 33K
R356	ERDS2TJ101	1/4W 100
R357	ERDS2TJ334	1/4W 330K
R358	ERDS2TJ8R2T	1/4W 8.2
R401-404	ERDS2TJ473	1/4W 47K
R405	ERDS2TJ103	1/4W 10K
R406, 407	ERDS2TJ332	1/4W 3.3K
R408	ERDS2TJ472	1/4W 4.7K
R409-411	ERDS2TJ3R3T	1/4W 3.3
R418-424	ERDS2TJ472	1/4W 4.7K
R451	ERDS2TJ472	1/4W 4.7K
R452	ERDS2TJ101	1/4W 100
R455	ERDS2TJ473	1/4W 47K
R461	ERDS2TJ391	1/4W 390
R471	ERDS2TJ100	1/4W 10
R472, 473	ERDS2TJ102	1/4W 1K
R474	ERDS2TJ561	1/4W 560
R475	ERDS2TJ273	1/4W 27K
R481, 482	ERDS2TJ472	1/4W 4.7K
R483	ERDS2TJ224T	1/4W 220K
R484	ERDS2TJ334	1/4W 330K
R485, 486	ERDS2TJ473	1/4W 47K
R501, 502	ERDS2TJ473	1/4W 47K
R503	ERDS2TJ271	1/4W 270
R505	ERDS2TJ203T	1/4W 20K
R801, 802	ERDS2TJ182	1/4W 1.8K
R803, 804	ERDS2TJ473	1/4W 47K
R805, 806	ERDS2TJ822	1/4W 8.2K
R807, 808	ERDS2TJ153	1/4W 15K
R809-812	ERDS2TJ333	1/4W 33K
R813, 814	ERDS2TJ561	1/4W 560
R815, 816	ERDS2TJ102	1/4W 1K
R817, 818	ERDS2TJ473	1/4W 47K
R819, 820	ERDS2TJ391	1/4W 390
R824	ERDS2TJ681	1/4W 680
R825	ERDS2TJ470	1/4W 47
R851	ERDS2TJ222	1/4W 2.2K
R852, 853	ERDS2TJ102	1/4W 1K
		CHIP JUMPER(S)
RJ101	ERJ6GEY0R00V	CHIP JUMPER
TJ101, 102	ERD25V0R00T	CHIP JUMPER
		CAPACITORS
C11, 12	ECBT1E103ZF	25V 0.01U ⚠
C13	ECEA1EU222B	25V 2200U
C14	ECA1EM471B	25V 470U
C15, 16	ECBT1H102KB5	50V 1000P
C17	ECA1AM102B	10V 1000U
C18	ECEA1AKA101B	10V 100U
C19	ECEA0JKA331Q	6.3V 330U
C21	ECA1EM101B	25V 100U
C22	ECEA1EU221	25V 220U
C23, 24	ECBT1H102KB5	50V 1000P
C25, 26	ECEA1AKA221Q	10V 220U
C30	ECFR1E104ZF5	25V 0.1U
C31	ECA1HM470B	50V 47U ⚠
C32	ECA1HM470B	50V 47U
C33	ECBT1H102KB5	50V 1000P
C101	ECEA0JKA220	6.3V 22U
C102	ECEA1HKS010	50V 1U
C103	ECA0JKF101I	6.3V 100U
C105	ECEA0JKS470	6.3V 47U
C110	ECEA1CSN4R7I	16V 4.7U ⚠
C111	ECUV1C393KBN	16V 0.039U
C112	ECUV1H392KBN	50V 3900P
C113, 114	ECUV1C224KBM	16V 0.22U
C115	ECUV1H331KBN	50V 330P
C116, 117	ECEA0JKA470I	6.3V 47U
C118, 119	ECUV1C104ZFN	16V 0.1U
C120	ECUV1H122KBN	50V 1200P
C121	ECUV1C105ZFM	16V 1U
C122	ECUV1E103KBN	25V 0.01U
C123	ECUV1C104ZFN	16V 0.1U
C124	ECA0JKF101I	6.3V 100U
C125	ECEA1CKS470I	16V 47U
C126	ECEA0JKS470	6.3V 47U
C127, 128	ECUV1E153KBN	25V 0.015U
C129	ECEA1HSN010I	50V 1U ⚠
C130	ECEA1CSN100I	16V 10U ⚠
C131	ECEA1HKS010	50V 1U
C132	ECUV1H681KBN	50V 680P
C133	ECEA0JKS470	6.3V 47U
C134	ECUV1H222KBN	50V 2200P
C135	ECEA1EKS330I	25V 33U
C136	ECUV1C104ZFN	16V 0.1U
C138	ECUV1C224KBM	16V 0.22U
C139	ECUV1E103KBN	25V 0.01U
C140, 141	ECUV1H270KCN	50V 27P
C142	ECUV1H271KN	50V 270P
C301	ECFR1E104ZF5	25V 0.1U
C302	ECEA0JKA470B	6.3V 47U
C305	ECBT1C103NS5	16V 0.01U
C306	ECBT1H102KB5	50V 1000P
C307	ECQV1H823JZ	50V 0.082U
C308	ECQV1H474JZ3	50V 0.47U
C309	ECBT1C103NS5	16V 0.01U
C351-353	ECBT1H102KB5	50V 1000P
C401	ECBT1H104ZF5	50V 0.1U
C402	ECEA0JKA331Q	6.3V 330U
C403	ECBT1E103ZF	25V 0.01U
C451	ECEA1HKN010B	50V 1U ⚠

Ref. No.	Part No.	Values & Remarks
C471-473	ECBT1C103NS5	16V 0.01U
C483	ECBT1H221KB5	50V 220P
C501	ECBT1C103NS5	16V 0.01U
C502	ECEA1AKA470E	10V 47U
C551	ECBT1C103NS5	16V 0.01U
C601	ECFR1E103KR	25V 0.01U
C801, 802	ECBT1H102KB5	50V 1000P
C803, 804	ECEA1CKA100B	16V 10U
C805, 806	ECCR1H391J5	50V 390P
C807, 808	ECCR1H331J5	50V 330P
C809, 810	ECEA0JKN220B	6.3V 22U ⚠
C811, 812	ECBT1H102KB5	50V 1000P
C813, 814	ECBT1C103NS5	16V 0.01U
C815	ECEA1AKA470B	10V 47U
C816	ECEA1AKA101B	10V 100U
C817	ECEA0JKA101B	6.3V 100U
C819, 820	ECBT1H100JC5	50V 10P
C821	ECBT1H102KB5	50V 1000P
C822	ECEA0JKA101B	6.3V 100U
C823	ECBT1H6R8K5	50V 6.8P
C824-826	ECBT1C103NS5	16V 0.01U
C851	ECA1CM101B	16V 100U

■ PACKAGING



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